

# SOUTHEASTERN BIOLOGY



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ASB

## ONLY CALL FOR PAPERS FOR THE 68<sup>TH</sup> MEETING

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ABSTRACT SUBMISSION—SEE PAGE 404

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Claudia L. Jolls addressed the banquet audience  
as Past President of the Association

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## **SOUTHEASTERN BIOLOGY**

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### **PURPOSE**

The purpose of this association shall be to promote the advancement of biology as a science by encouraging research, the imparting of knowledge, the application of knowledge to the solution of biological problems, and the preservation of biological resources. The ASB has representation in Section G Committee of the AAAS. Varying types of membership are available to individuals and institutions. See inside back cover.

### **TIME AND PLACE OF FUTURE MEETINGS**

2007 April 18-21: Hosted by the University of South Carolina, Columbia, South Carolina.  
2008 April 16-19: Hosted by Furman University, Greenville, South Carolina.



## THE VIEW FROM HERE

### A MESSAGE FROM THE PRESIDENT KIM MARIE TOLSON

Congratulations to everyone who attended the 67<sup>th</sup> Annual Meeting of the Association of Southeastern Biologists in Gatlinburg, Tennessee, March 29 through April 1, 2006. I would like to extend a special welcome to all of the first-time attendees, presenters, and exhibitors. If you have not heard by now, you played a part in the making of history. This was a record setting meeting in many ways. There were a record number of attendees—965; a record number of presentations made—494; and a record number of exhibitors—35. If these numbers are a sign of things to come, then the future of ASB is looking great.

As a prosperous and expanding organization, change is inevitable and necessary to accommodate our growth and success. The Executive Committee will be meeting this September to address some changes that we feel need to be made to make our organization more attractive to all disciplines of biology, more efficient in light of the time demands that are placed on all of us, and more professional. I predict we will be presenting changes to the bylaws to be voted on by the membership—changes that reflect our current needs and size. This will not be an easy task, but I am confident in the wisdom and experience of the individuals you have elected to govern our Association. My promise to you is that the **Purpose** of ASB will not be ignored.

As with any growth spurt, I also predict that we will experience a few growing pains. Please remember that growth is not a problem to complain about, but rather an achievement to brag about. I'm asking that you use the data above to encourage your colleagues to join ASB and participate in our meetings. Encourage diversity! We want research into all five Kingdoms of Life represented; we want the organismal and the molecular research presented; we want faculty, graduate students and undergraduate students involved; we want academicians, consultants and government employees participating in our Association. Columbia, South Carolina is waiting for us all.



Kim Marie Tolson (right) receives the gavel  
from Dwayne A. Wise.

**ASSOCIATION OF SOUTHEASTERN BIOLOGISTS  
INTERIM EXECUTIVE COMMITTEE MEETING  
SATURDAY, 10 SEPTEMBER 2005  
HAMPTON INN  
COLUMBIA, SOUTH CAROLINA**

ATTENDANCE: 19 individuals attended the meeting.

NAME	CAPACITY	EMAIL ADDRESS
Dwayne Wise	President	daw1@ra.msstate.edu
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Patricia Cox	Local Arrangements 2006	pbcox@tva.gov
Joe Pollard	Committee Representative	joe.pollard@furman.edu
Donald Roush	Tri-Beta Representative	dhroush@una.edu
Judy King	SEMS Representative	jking@usouthal.edu
John Shields	SEMS Representative	jshields@cb.uga.edu

President Dwayne Wise called the meeting to order at 8:59 A.M.

**Presidents Opening Remarks**—Dwayne Wise began the meeting by welcoming representatives from the Southeastern Microscopy Society (SEMS). Introductions of all attending were made. Dwayne pointed out that in order to speak, you must be recognized by the Chair. Everybody remembers what happened on September 11<sup>th</sup>. You probably also remember what happened about 10 days ago on the Gulf Coast. My state, Louisiana, and to some extent, Alabama took a fairly major hit. He then followed by asking for a moment of silence for all the victims of 9/11 and Hurricane Katrina. In order to try to finish by 5:00 today, Dwayne asked if you are making a report to try to be brief and highlight the important things. We understand that you did that and try to just highlight the things that you think people ought to hear that are somewhat different. So we will begin with the officer's reports.



## OFFICER'S REPORTS

**President's Report**—Dwayne Wise indicated he had prepared a written report. He mentioned he had all the committees filled except for one which is currently under-staffed. He said he had talked a lot with affiliates and the presence of Judy and John of SEMS is partly a result of that. He also talked with the Southeastern Branch of the American Society of Microbiologist and said they are not ready at this time to affiliate with ASB. SB-ASM thinks it might be a good idea and they are considering it. Dwayne mentioned that the President is one of his colleagues and she will be bringing it up to their Executive Committee. Dwayne added that he had appointed an ad-hoc committee to deal with the broad issue of how ASB wants to run its meetings and where, and what role a meeting coordinator will play in our meetings. He said the Committee is working on it, but they do not have a report yet. Dwayne mentioned he had sent about 250 letters to regional biology chairs, graduate coordinators and so on advertising our annual meeting and encouraging them to come to attend as exhibitors in order to recruit graduate students.

**President Elect's Report**—Kim Marie Tolson gave a report. Kim mentioned she was very fortunate in that Pat Cox, the local arrangements chair, volunteered to secure Dr. Peter White as the plenary speaker. She indicated that a travel and honorarium were currently being worked out. Pat explained that Dr. White is director with the North Carolina Botanical Gardens and is also Chairman of the Board for Discovery Life in America. He is a plant ecologist and should be very interesting. Additionally, he will probably play in the band Wednesday night. Jim requested information on Dr. White for the December issue of *SEB* and Kim responded that Pat or she will get some information to Jim as well as to Terry for the web site.

**Action Item 1:** Kim and Pat will get biographical information on Dr. Peter White to Jim Caponetti for the December issue (deadline September 28) of *SEB* and Terry Richardson for the website.

**Secretary's Report**—Terry Richardson gave the report. He indicated AAAS information had been updated as well as the archives up through April 05. The said April 15<sup>th</sup> business minutes had been prepared and published in the bulletin for the membership's vote of approval at the next meeting in 2006. The April 13<sup>th</sup> Executive Committee and April 16<sup>th</sup> Executive Committee meeting minutes have been prepared and need approval pending revision. He asked the Chair to call for approval of minutes. Dwayne called for a motion to approve the minutes as amended.

**Motion 1:** It was moved that the April 13<sup>th</sup> and 16<sup>th</sup> EC meeting minutes be approved as amended.

Motion 1 was seconded.

Motion 1 passed.

**Treasurer's Report**—Tim Atkinson presented his report. He indicated we need to look at our financial picture but would save that for New Business.

**Print Editor's Report**—Jim Caponetti gave his report. He indicated all is going well with Allen Press and with FedEx. He said they have been very good about delivering the journal in a timely manner. He also mentioned that if any of the EC had changed addresses, telephone, fax, or e-mail, to let him know for the inside front cover of *SEB*. Jim said that paper costs keep going up, printing costs, *etc.*, causing bulletin costs to rise. He has somewhat addressed the situation by reducing the number of extra issues. He said he had reduced the number of extra copies from 50 per issue to about 20 for the September through January issues in an effort to reduce costs. Jim pointed out that the April issue was another story. He said he was still trying to fine-tune how many extra copies are needed because a certain number of people join ASB at the annual meeting and they should get the April issue. Jim indicated that the motion passed in the last EC meeting to print a program and may result in savings on the April issue. Some discussion followed. Jim also said that there were increased printing costs. Allen Press keeps raising its prices because the cost of paper keeps going up. Dwayne said that we are going to come back to the whole issue of the journal and the quality of the journal as it relates to our budget later this afternoon.

**Web Editor's Report**—Terry Richardson gave the report. He mentioned he had done his best to try to keep the site up-to-date. He said he tried to post everything almost immediately as it was sent. He also indicated that there were some things beyond his control at this point. For example, when you go to the web page and see question marks, those are actually quotations, but when he does the editing in FrontPage there are quotation marks there. Likely there is something in the communication through the server that is not coming up correctly. Joe Pollard indicated he may be able to help with the question marks. Terry requested that items should be sent in MS-Word format or a PDF file, and to be certain that it is the way you want it to appear. Some discussion followed concerning the ASB domain name.

**Action Item 2:** Joe Pollard should consult with Terry on how to change the question marks appearing on the web page to quotation marks.

**Archivist's Report**—John Herr presented his report. He said he had filed all that he received for last year and that we are up to date on things taken down to University of Georgia libraries. He mentioned that he keeps most of the archive materials in his possession for a while because people call and ask about recent items. John mentioned he came across an old computer-generated list of ASB attendees at the 1967 annual meeting in Columbia. He suggested we may wish to again generate a list of attendees. Terry inquired if there was an 'Affiliates' file in the archives and John indicated there was, but that there were no files for individual affiliates. Terry asked if it would be possible to construct such individual files and John said he could. Terry commented that this would be an additional perk for organizations affiliating with ASB.



**Action Item 3:** John Herr will construct file categories for each individual affiliate wishing to archive materials through ASB.

**Book Editor's Report**—Debbie Moore briefly gave a report. She indicated that there had been an increase in book review submissions from the ASB membership due to a large part to the EC. She thanked those who have agreed to review books and have done so in a timely fashion.

## **AFFILIATE REPORTS**

**Southeastern Fishes Council**—Hank Bart was unable to be present due to Hurricane Katrina. Hank is in Baton Rouge and safe. It was also mentioned that Don Hauber from Loyola was in Kansas with his family. Dwayne requested that anyone receiving news on colleagues from the storm ravaged area please email the EC.

**Southern Appalachian Botanical Society**—Pat Cox was present and gave a report. She said she had an e-mail from Michael Held who is SABS President with the biggest news for SABS that they reached their goal for the endowment of \$200,000 in April. Howard Neufeld is the President-Elect for SABS.

**Southeastern Society of Parasitologists**—Pat Cox mentioned that SSP would be meeting with ASB in 2006.

**Tri-Beta**—Don Roush presented a brief report. He indicated that Tri-Beta was in the early stages of preparation for the 2006 meeting with ASB. He said they had forwarded information to LAC with their needs for space and will be sending out a call-for-papers to get ready for the meeting. He said they were looking forward to having a good meeting.

**Society of Herbarium Curators**—John Herr reported. He announced that he was the affiliate representative of the Society of Herbarium Curators and that this was the first time an international society had affiliated with a regional one. He said SHC now has members from the British Isles. He said that bulldozers were currently pushing a road through to the herbarium at Gulfport, Mississippi, and tomorrow botanists from at least 3 or 4 universities will be converging on the herbarium to rescue it from the water it has been soaking in. The herbarium specimens will probably be carried to Fairchild Gardens in Florida, because they have had a lot of experience with restoration and drying out specimens.

## **SOCIETY REPRESENTATIVE REPORTS**

**AAAS**—Bonnie Kelley was unable to attend, but a written report was forwarded.

**AIBS**—Geraldine Twitty was unable to attend but sent a written report via Elaine Davis. Elaine Davis read the report as presented. And a copy was given to the secretary. It was suggested that Terry get a copy of the report from Geraldine and place it on the web page.

**Action Item 4:** Terry needs to contact Geraldine for an electronic copy of the report and post it on the web page.

**Association of Systematics Collections**—Kim Marie Tolson gave an update. She indicated that ASC has folded into a larger organization called NSCA, the National Science Collection Alliance and they have a web site, [www.NSCAlliance.org](http://www.NSCAlliance.org). She said she went to their web site and learned that membership was extremely pricey. If you have a collection, whether it's plants, animals, or whatever, anything in the natural history realm, if you have international specimens in your collection, dues are \$5,000 a year. Kim indicated that she was not sure that individuals participating in ASB would belong to such a pricey alliance. She mentioned that Pat Cox gave her some information on another group, The Society for the Preservation of Natural History Collections or SPNHC (the "spinach" group). She indicated she would pursue this group further.

Dwayne asked for a motion to discontinue affiliation with ASC.

**Motion 2:** It was moved to discontinue affiliation with ASC.

Motion 2 was seconded.

Motion 2 passed without discussion.

Dwayne charged Kim Marie with pursuing the SPNHC connection and report at the spring meeting.

**Action Item 5:** Kim Marie will pursue affiliation with SPNHC further and report to the EC at the spring meeting.

### **(Agenda Suspended)**

Dwayne suspended the Agenda to address the affiliation of the Southeastern Microscopy Society. He welcomed our friends and colleagues from SEMS, Judy King and John Shields. He indicated that, as a representative of ASB, he had been talking about an affiliation with SEMS for about a year or maybe longer. Dwayne said he went to Pensacola Beach to their annual meeting and met with their Executive Committee. They discussed the issue and voted in favor of affiliation with ASB. Dwayne indicated that Judy, as SEMS President, presented to him all of the necessary documentation as listed in ASB's affiliation document. Dwayne then asked for a motion for ASB to officially affiliate with the Southeastern Microscopy Society.

**Motion 3:** It was moved that ASB officially affiliate with the Southeastern Microscopy Society.

Motion 3 was seconded.

Discussion followed.

It was asked how many members SEMS had. Judy responded that there were as many as 160 on the books. She said the number of active dues-paying members



is less than that. The last number she had was about 80. Corporate membership is running around 30-40.

The question was called, seconded and passed.  
Motion 3 passed.

Dwayne mentioned the need to discuss whether a vote for approval of affiliation should go before the membership and opened the floor for discussion. It was mentioned that this was not in the ASB By-laws. Discussion followed. After hearing that there was no precedent for presenting affiliation to a vote of the membership, Dwayne ruled that voting by the EC alone was effective and that SEMS was now an official ASB affiliate. It was mentioned that something would be put into *SEB* about SEMS as a new ASB affiliate.

**(Return to the Agenda)**

## **COMMITTEE REPORTS**

**Local Arrangements Committee 2005, Florence**—Terry Richardson gave a report. He presented a budget summary and had copies for distribution. He noted that he included percentages so that future LACs would have these to go by. He noted we had 596 in attendance. Of these in attendance, we had less than 10 or 11% take field trips, and that was with only 3 field trips offered. He pointed out that if Tri-Beta is removed, less than 5% attending signed up for field trips. About 1/3 of the membership or 1/3 of attendees register and attend the pre- and post-plenary socials and about 25% attending wanted box lunches for Thursday and Friday. Sixty-five percent attended the social with 46% attending the banquet. Terry noted that this was likely the result of relatively low banquet costs and that award applicants had to be present in order to win the award. He offered an addition to the disbursements not appearing on the distributed copy. He pointed out that the copies did not have the security officers at \$1525.00 bringing the total to \$76,601.68. This gave a meeting short-fall of \$963.19. Terry said because of liability issues, certainly for the Thursday night social, that there should be security officials present especially as it relates to people driving to and from events.

Terry pointed out that there was basically a \$1000 short fall but, adding the expense of meeting coordinator, it came to about \$-10,563.19. Terry also reported some information about room nights. He indicated he only had to guarantee 375 room nights at the Holiday Inn to get the meal deals and free banquet room use and the complimentary breakfast that the EC had. However, he said ASB actually ended up with 634 room nights and that does not count those staying over Saturday night. Tim Atkinson pointed out that the T-shirts included in Terry's report were listed only because they were run through the ASB registration. Those were done by Tri Beta and Tri Beta was reimbursed; it is not a meeting expense that has to be dealt with. Some discussion followed.

**Local Arrangements Committee 2006, Gatlinburg**—Pat Cox and Randy Small were present to give a report. They passed out a meeting planner guide for the Gatlinburg meeting. They showed what the new Mill Auditorium will look like.

Three weeks ago Pat had a hard-hat tour of these facilities and said they had just poured the concrete on the floor. She said they promised that this will be ready and gave her some drawings so we could see what the newly renovated Mill Auditorium will look like. The Glenstone Lodge, the meeting hotel, is about two blocks from the convention center. Right next door to the lodge is the Holiday Inn that will take any overflow. The Microtel is right across from the Convention Center and they were hoping that would be for students only because it is cheaper and the rooms are very small. They next covered general meeting layout discussing what functions would be held in various rooms. They mentioned that there will be security because it is required by the Convention Center. Discussion followed.

They mentioned the banquet was set up as well as the Thursday night social. The Thursday night social is going to be called the Beer and Bandana bash and beer will be from the local microbrewery. They also mentioned that the various luncheons and breakfasts were set up. The banquet is going to be about \$30-\$35 with students about \$5-10 less. Pat pointed out the concern over filed trips, but really does not think that will be an issue at Gatlinburg. Some general discussed ensued.

**Local Arrangements Committee 2007, Columbia**—John Herr was present to give a report. John indicated that Columbia was very excited to have ASB return. He mentioned that two symposia were already being discussed and that two field trips were being planned as was something for attending spouses. The Thursday night social was being planned and is scheduled to be held in the Strom Thurman Wellness Center. There is a swimming pool area with beach volleyball. John says swimming will be allowed but no skinny-dipping. There will be a band playing everything from beach music to bluegrass. He said since this was the barbeque capital of the world, they were planning a whole pig barbeque, a pig-picking type barbeque. John mentioned that their committee was in place and everyone seems to be on task. John wrapped up asking if there were any questions. There were some general questions and discussion that followed. John mentioned that at least one symposium will feature the fact that the USC Herbarium will be 100 years old in 2007 and that is also the 300<sup>th</sup> year of Linnaeus.

**Local Arrangements Committee 2008, Greenville**—Joe Pollard was present to report. Joe said there was not much to report because 2008 is still a long way out, but that everything seems to be well in hand. He said Scott made a second site visit a couple of months ago mostly looking at facilities for the Thursday venue. For the meeting venue as a whole, Joe indicated there were still basically two options, one is the Hyatt which ASB used before. It is by far the most economical because they will give us the meeting rooms for free with a guarantee of room occupancy which ASB can meet. The size of this facility may be a little cramped, depending on how much the meeting grows, but it can probably be worked out. Joe said the other alternative is the Palmetto Expo Center which would be great but it's out on the edge of town with nothing interesting near by and Greenville is the main attraction. Plus it's much more expensive and you have to pay up front to have a meeting there. They are looking at several more alternatives for the Thursday night socials, all of which



can be in-doors, and otherwise everything is well in hand. He said the room rate is \$119 at the Hyatt but that they are going to try and negotiate that down.

**Committee on Women, Minorities and Persons with Disabilities**—Dwayne Wise had a written report from Committee Chair Pat Parr. He first covered a proposal put forth by the committee. The committee proposed that for the '06 Gatlinburg meeting they would like to have an hour and half to two hour mini-symposium on identifying career opportunities in Biology with some refreshments available, lunch if possible. Dwayne said they will try to get a sponsor to cover the cost. The committee is asking the EC for a commitment of \$300.00, but if they get the sponsorship commitment they won't use the \$300.00. They also request that there be a way to sign up for box lunches on the registration form. Pat mentioned they are not going to do box lunches so there'll be some other solution for that if it comes up. They are soliciting ideas for discussion leaders and presenters. Some general discussion ensued. Dwayne continued the report. In '05 this committee had a successful workshop and they are collecting information about ASB minority involvement. Dwayne made a statement regarding increasing minority involvement in ASB. The committee's suggestions were to do things like give travel assistance to any minority presenter, give special assistance to minority institutions that want to send people and so on. He mentioned that they have volunteers to contact HBCU biologists in several states, North Carolina, South Carolina, Tennessee, Georgia, Florida, Alabama, and they need volunteers for the states of Virginia, Mississippi, Kentucky, West Virginia, Louisiana, and Illinois. Dwayne concluded the report.

**Action Item 6:** Dwayne charged the committee to present some actionable recommendations for the spring meeting regarding financial support to increase ASB minority involvement.

**Conservation Committee**—Bob George was not present. Dwayne said he knew they were working on a statement that would become a resolution and that he had received e-mails from Bob George about that. He said Bob is working with Pat Parr and Claudia Jolls who is Chair of the Resolutions Committee to present a resolution at the spring meeting. Dwayne thought it had to do with invasive species.

**Education Committee**—Phil Gibson was not present for a report. Dennis Haney presented a synopsis of work up to this point by the committee. He said they had been working on a proposal to conduct a half day workshop on teaching technology. Dwayne pointed out that the Education Committee is under staffed with only three members instead of the required six. This is causing the committee to run a little behind schedule.

**Action Item 7:** Dwayne will appoint 3 additional members to the Education Committee before the '06 meeting.

Don Roush, Debbie Moore and John Shields agreed to fill the committee vacancies. It was agreed that Kim Marie Tolson will reestablish the rotation schedule.

**Enrichment Fund**—Kim Marie Tolson presented a report. She reported no activity other than possible contributions that Tim Atkinson will have reported. The Enrichment Fund will seek out the NABT Outstanding teacher from the state of Tennessee and invite that teacher to the meeting. Some discussion followed. Some asked about contributions since Claudia Jolls's challenge. Kim mentioned she had not actually totaled those but she was relatively confident that we were not near matching the challenge yet.

**Action Item 8:** Jim Caponetti will prepare a box announcement regarding Claudia's challenge to be printed in the Bulletin.

John Herr mentioned considering making the Enrichment fund an Endowment. He pointed out the success that SABS is having with that technique. Some discussion followed.

**Finance Committee**—Tim Atkinson was present but no report was needed.

**Meritorious Teaching Award Committee**—Pat Cox reported. She said there were no new nominees, but mentioned they had three strong candidates.

**Nominations Committee**—Andy Ash was not present but Dwayne Wise said the committee was making progress.

**Past-President's Council**—There was no report given, but Dwayne mentioned there would be an item to discuss under New Business.

**Place of Meeting Committee**—Joe Pollard said there was no report. Dwayne was considering looking into the University of Mississippi and Oxford as a future meeting place.

**Poster Awards Committee**—Dennis Haney spoke regarding the committee. Things are going as planned. The addition of ad hoc members to the committee was discussed.

**Publications Committee**—Debbie Moore gave a report. She said all is going well. She mentioned that we have two ASB members wanting the cover of their respective books featured on the cover of the bulletin. She mentioned this was not normally done. She said they then inquired about a page on the inside. She asked the EC for direction on this. Dwayne said that advertisement space in the bulletin was available for purchase. Discussion ensued. Jim Caponetti mentioned that we indeed do not sell advertisements in the bulletin. Don Roush and Terry Richardson spoke to the historic consideration that we do not sell ads in the bulletin.

**Action Item 9:** Dwayne charged the Publications Committee to provide a set of written actionable recommendations for a meeting program with space for exhibitors to advertise. They should also consider how ads might reduce journal costs.



**Microbiology Research Award Committee**—There was no report.

**Action Item 10:** Dwayne charged the committee to write up a committee description for the constitution.

**Resolution Committee**—Dwayne mentioned that there was a resolution in the works on invasive species.

**Break—12:00 noon**

**Reconvene—1:55 pm**

## **OLD BUSINESS**

**Meeting Coordinator**—Dwayne Wise and Tim Atkinson were directed by the EC to conclude a contract extension with Scott Jewell which they did. Dwayne said copies were available on request. Dwayne said Scott has continued to work with the LAC and do similar things to what he had been doing and he negotiated a price for doing that. The amount was less than he had suggested at the previous meeting. At the EC meeting in Florence, Dwayne formed a committee of Tim Shaw, Jim Hull, and Andy Ash to come up with a study on the whole area of ASB meetings. This was to include not just whether or not we should have a Meetings Coordinator and what we should pay that person, but looking ahead to the next 5 years or even 10, about what does ASB want these meetings to be like. Dwayne said the committee is working and they are going to have a set of recommendations for us for the April meeting. However, Dwayne pointed out that in the mean time, Scott has a contract that goes only through the end of April. He indicated that the EC would have to do something at the April meeting. The EC will need to make a decision with the input from the ad hoc committee.

**Action Item 11:** Dwayne will remind the ad hoc committee members to communicate with previous LAC chairs for input into the matter.

Discussion followed regarding the time frame for presentation of meeting coordinator contracts. Dwayne pointed out that the EC could, again, ask him and Tim to come to the EC in April with a negotiated contract. Considerable discussion followed. Dwayne urged the EC to do something at this time. Tim recommended a three year contract with annual renewal. Considerable discussion followed.

**Motion 4:** It was moved that the EC have Dwayne and Tim negotiate a three year rolling contract renewable annually at the spring EC meeting with Scott Jewell and A2Z Convention Services.

Second.

Discussion followed.

The question was called and the call passed 7-3.

Motion 4 passed.

**Other Old Business**—At the Saturday EC meeting in April Dwayne Wise charged Joe Pollard, Jim Caponetti and Tom Wentworth to look into ways to address the problem of no-shows at the meeting, *i.e.*, people who submit abstracts, posters, or papers and then don't present them. One option examined was the one that is utilized by the Ecological Society of America. This has a person pay up front for submitting for a presentation. The fee is not refundable unless the person cancels before a specified deadline which is well in advance of the meeting. In other words, a person could cancel by some day established by us and receive a refund or they can register for the meeting and have that money put toward their registration fee. There are contingencies for people with medical emergencies or family emergencies and international people who can't get a visa and so forth, they can get a refund beyond the deadline. Also, if the person does not show they are not allowed to present the following year. Discussion followed.

**Action Item 12:** Dwayne charged the ad hoc committee in place to pursue the issue of no-shows and bring data to the spring EC meeting with actionable recommendations on the issue.

## NEW BUSINESS

**Dues**—Dwayne presented a handout looking at similar sized organizations and their dues. It was clear that ASB was considerably lower than those organizations. Discussion followed. Tim presented some numbers from state organizations. It was pointed out that the last ASB dues increase was in 2002. Since that time publication expenses have increased 13%. Total expenses have increased 41% during that time period, but income increased only 27%. Other comparable increases in expenses and dues short falls were presented. Discussion followed.

**Break**—3:20 pm

**Reconvene**—3:35 pm

**Unfinished Business**—Joe Pollard reminded the EC that recommendations from the Patrons and Exhibitors Committee to be entertained by the EC were tabled at the Saturday April 12 meeting. This was to be brought forth today, but the committee thought more time was needed and the recommendations would be presented at a later date.

**Dues (cont.)**—Discussion on dues increase and structure continued.

**Motion 5:** It was moved the EC bring before the membership a recommendation to increase regular member dues to \$35, regular member three years to \$95, student member dues to \$15, family to \$40, emeritus to \$15, contributing to \$70, sustaining to \$140, life to \$350, and library to \$40 and library three year dues to \$100.

Seconded.

Discussion followed.

**Action Item 13:** Dwayne Wise and Tim Atkinson will distribute to the members of the EC their data reflecting a need for dues increase.

Question was called and passed.  
Motion 5 passed.

**Action Item 14:** Jim Caponetti will publish these proposed increases and arguments as written by President Wise and that the EC passed this recommendation unanimously.

**Website Issue—**Terry Richardson presented an offer from a company to move the site to their server. This could make finding our site easier. Discussion followed.

**Motion 6:** It was moved to leave the web site where it is.

Seconded.  
Discussion.  
Question was called and passed.  
Motion 6 passed.

**Publications Issue—**Total printing and mailing costs exceed our dues income and represents 30% of total expenditures. Discussion followed.

**Motion 7:** It was moved to eliminate issue number 4 and combine duplicate material from issues 4 and 1 into a single issue.

Seconded.

Discussion ensued with the Constitution and Bylaws read for clarification.

**Action Item 15:** Dwayne charged the Publications Committee to bring to the Wednesday EC meeting in Gatlinburg a list of recommendations for rearrangement of our publication strategy.

Question was called and passed.  
Motion 7 did not pass.  
More discussion followed.

**Symposia—**Symposia of the 2006 Gatlinburg meeting were next entertained.

Committee on Women, Minorities, and Persons with Disabilities proposal was read. The proposal carries with it a request for \$300.

**Motion 8:** It was moved to accept the Committees proposal.

Seconded.  
Discussion followed.



Question was called and passed.  
Motion 8 passed.

Zack Murrell sent a proposal for a symposium on community standards.

**Motion 9:** It was moved to accept the proposal

Seconded.  
Discussion followed.  
Motion 9 passed.

There was a proposal from Pat Cox for an "All Taxa Biodiversity Inventory" symposium.

**Motion 10:** Move to accept.

Seconded.  
Motion 10 passed.

There was a motion from the Education Committee for a half-day workshop doing science and biology education with technology. Dennis Haney mentioned they were planning on bringing in two experts in this area. He said they would need about \$500 for each expert. Discussion followed.

**Motion 11:** It was moved to approve the request for funding.

Seconded.  
Discussion followed.  
Motion 11 and the second were withdrawn.

Scott Jewell had some additional new business related to non-dues revenue. He also mentioned that he would be representing ASB at several upcoming national meetings. He also addressed meeting locations and competition for our business. Discussion followed.

Discussion arose regarding selling advertisements in the bulletin.

**Motion 12:** It was moved to sell advertisement space in issue number 2 of the 2006 bulletin only to patrons and exhibitors, at a price determined by the LAC and meeting coordinator.

Seconded.  
Discussion.  
Motion 12 passed.

**Adjournment**—4:55 pm.

Respectfully submitted,  
Terry D. Richardson, Secretary.

**ASSOCIATION OF SOUTHEASTERN BIOLOGISTS  
AIBS REPRESENTATIVE REPORT  
REPORT: 56<sup>TH</sup> AIBS ANNUAL MEETING**

Kent Holsinger, AIBS President, opened the 56<sup>th</sup> AIBS annual meeting on 24 May 2006 at the Westin Grand, Washington, D.C. The theme, "Biodiversity: the Interplay of Science, Valuation, and Policy," offered the two hundred plus participants the opportunity to explore diverse linkages among the fields linking biodiversity to economics, policymaking, and ecosystem services. The initial plenary address by Daniel Esty, "From Science to Policy: Biodiversity Protection, Metrics, and Results," was followed by a Welcome Reception and Student Poster Session.

Plenary sessions, interspersed with discussion groups/panels and the Student Poster Awards Ceremony, continued on 25 May 2006. The plenary speakers included Jamie R. Clark (The Endangered Species Act Under Attack: The Dynamic Interplay between Science and Policy), Shahid Naeem (Applications of Biodiversity Research to Human Well-Being), Richard B. Norgaard (Values and Valuation in the Rapidly Changing World), Stephen Polasky (Valuing Ecosystem Services), and Stephen Bocking (Defining Effective Science for Biodiversity). Access to the proceedings is available via the AIBS Virtual Library.

Attendees interested in working towards expanding career, professional development, and services opportunities for women, minorities, and persons with disabilities were welcomed at the first AIBS Diversity Luncheon on 25 May. The featured speaker, Dr. Robert Stanton, former Director, US National Park Service, addressed issues regarding the "Diversity in Resources Stewardship: An Imperative for Achieving and Sustaining Environmental Quality." The Student Poster winners—Michelle D. Nicholson (Howard University) for individual research and to Rysanek Rivera (The City College of New York) for group research—were introduced.

Reports of each of the AIBS services and programs were made. All reported positive interactions, growth, and plans for expanding operations. In particular, the Diversity /Committee anticipates the first Diversity Scholars/Diversity Leadership Awards this summer, the Education Committee is implementing the national office of the Coalition on the Public Understanding of Science (COPUS). AIBS and COPUS will cooperatively organize the **2009 Year of Public Understanding of Science Activity** along with AAAS and the National Academy of Science. There are plans for curriculum study in 2008 and perhaps an educational summit.

Exciting plans are in the works! Plan to attend the May 2007 AIBS meeting in DC that will be held in conjunction with the International Union of Biological Scientists.

Respectfully submitted,  
Geraldine W. Twitty  
AIBS Representative

## ASSOCIATION OF SOUTHEASTERN BIOLOGISTS

### 67<sup>th</sup> ANNUAL BUSINESS MEETING FRIDAY, 31 MARCH 2006 GATLINBURG CONVENTION CENTER GATLINBURG, TENNESSEE

**Attendance**—173 voting members present

**Call-to-Order**—President Dwayne Wise called the 67<sup>th</sup> Annual Business Meeting of the Association of Southeastern Biologists to order at 11:24 AM.

Dwayne commented this may be the largest ASB meeting ever with over 978 registered, a record number of abstracts and posters submitted and the largest bulletin ever.

Dwayne asked for approval of the minutes of the 66<sup>th</sup> Annual ASB Business Meeting. Terry requested any editorial corrections be given to him following the meeting.

**Motion 1:** A motion was made and seconded to approve the minutes.

Motion 1 passed.

**Election of Officers**—Dwayne announced the following slate of officer candidates presented by the Nominations Committee and asked each to stand:

President-Elect—Beverly Collins and Mike Dennis.  
There were no nominations from the Floor.

Vice President—George Cline and Bonnie Kelley.  
There were no nominations from the Floor.

Secretary—Debbie Moore and Paul Schmalzer.  
There were no nominations from the Floor.

Executive Committee Members-at-Large—Neil Billington, Mijitaba Hamissou, Don Roush, Wayne Van Devender.  
There were no nominations from the Floor.

**Motion 2:** A motion was made and seconded to close nominations.

Motion 2 passed.

Voting proceeded and ballots were collected by tellers and removed for tallying.

**Election Results:** [Note from the Secretary: Results of the election of officers are presented herein as a matter of record. Election results are not announced at the Annual Business Meeting, but rather are held for announcement at the Annual ASB Banquet.]



Mike Dennis, President-Elect  
Bonnie Kelley, Vice President  
Debbie Moore, Secretary  
Don Roush, Executive Committee Member-at-Large  
Wayne Van Devender, Executive Committee Member-at-Large.

**General Business**—Dwayne distributed a description of the Research Award in Microbiology worded for the ASB Bylaws

**Motion 3:** Motion to amend the Bylaws as described was made and seconded.  
Motion 3 passed.

A resolution regarding Invasive Species was distributed.

**Motion 4:** A motion was made to approve the resolution. The motion was seconded.

**Motion 5:** A motion to amend the resolution was made and seconded.  
Discussion followed.  
The question was called and passed on the motion to amend.  
Motion 5 passed.

**Motion 6:** A motion was made to amend the resolution as follows—replace “alien” with “invasive/exotic” and replace “weeds” with “invasive/exotics”.  
Discussion ensued.  
The question to amend as above was called and passed.  
Motion 6 passed.

**Motion 7:** A motion was made and seconded to accept the resolution as amended.  
Discussion followed.  
Motion 7 passed. [Note: Motion 4, as stated was never acted on. Subsequent motions were allowed and apparently took precedence over Motion 4 while still on the floor. The validity of the final action is questionable.]

Dwayne asked for a motion concerning application for emeritus status.

**Motion 8:** A motion was made and seconded to accept the list of applicants for emeritus status.  
Motion 8 passed.

**Adjournment:** The 67<sup>th</sup> Annual Business Meeting of the Association of Southeastern Biologists adjourned at 12:06 PM.

Respectfully Submitted,  
Terry D. Richardson, Secretary

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EVENTS OF THE 2006 ANNUAL MEETING IN GATLINBURG, TENNESSEE  
HOSTED BY THE UNIVERSITY OF TENNESSEE, KNOXVILLE

ASB MERITORIOUS TEACHING AWARD

UNIVERSITY PROFESSOR HONORED

RONALD V. DIMOCK, JR.

The ASB Meritorious Teaching Award is our most prestigious award, honoring those who have excelled in their commitment to excellence in teaching and relaying their love and passion for biology to others. The award carries a cash prize of \$1,500.00 and is graciously sponsored by patron member Carolina Biological Supply Company, Burlington, North Carolina.

The 2006 ASB Meritorious Teaching award was presented to **Dr. Ronald V. Dimock, Jr.**, of Wake Forest University, by award committee chair, Patricia B. Cox. Dr. Dimock was born in Melrose, Massachusetts, and received his BA degree in Zoology from the University of New Hampshire, a MS degree also in Zoology from Florida State University where his research was entitled "An examination of physiological variation in the American oyster (*Crassostrea virginia*)" and a PhD from the University of California at Santa Barbara. His research for his PhD centered on the "Ecological and physiological aspects of host recognition by a symbiotic polychaete."

An ASB member since 1971, Dr. Dimock has served on the Meritorious Teaching Award Committee and has been an author or co-author on 21 presentations at ASB meetings and his name appears on 52 peer-reviewed publications. He has directed 24 MS and PhD students as well as 68 undergraduates in independent research projects during his 35 years of teaching. These students have gone on to productive careers in academics, research, or the medical field.

He regularly teaches a freshmen-sophomore course in Comparative Physiology as well as upper division classes in Invertebrate Zoology and Marine Biology, and on occasion, Tropical Marine Ecology, Physiological Ecology and Advanced Invertebrate Zoology. He is a regular instructor at the Duke University Marine Laboratory where he teaches Marine Invertebrate Zoology. Ron also loves to take undergraduate students on extended field trips such as a 30 day trip from Winston-Salem NC to Cabo San Lucas, Baja California; a three-week trip to the Galapagos Islands, and a semester-long residential program in London, England.

Dr. Dimock has several impressive honors. He was named the Thurman D. Kitchin Professor of Biology in 2003. This is an endowed chair which Wake Forest University reserves for professors that are the embodiment of the scholar-teacher ideal. He also has one organism (*Unionicola dimocki*) and 1 subgenus (Dimockatax of the genus *Unionicola*) named in his honor.

When reading through all the letters of support for Dr. Dimock's nomination for this award, I found myself jealous that I didn't have a class taught by him. Here are just a few of the many notable comments provided by his former students.

Quote: "He cares deeply about his students, both personally and professionally and views his role as advisor to be a lifelong commitment. His unwavering devotion to teaching and the well-being of his students makes his courses amount the most popular in the department. His lectures are inspiring. He is meticulous and thorough and has an uncanny ability to distil down the most complex concepts into their components parts and convey them effectively. He believes that students learn best by doing, thus he has spearheaded efforts to introduce innovative inquiry-based laboratory exercises that encourage student's to hone their problem-solving and critical thinking skills while helping them gain a greater appreciation for the scientific process. However his commitment to teaching is not restricted o the classroom or laboratory, He can turn any situation into an educational experience. I once witnessed him giving a mini-lecture on the biomechanical properties of snail mucus to a group of students who had stopped to watch a slug crawl across the sidewalk after an afternoon rain".

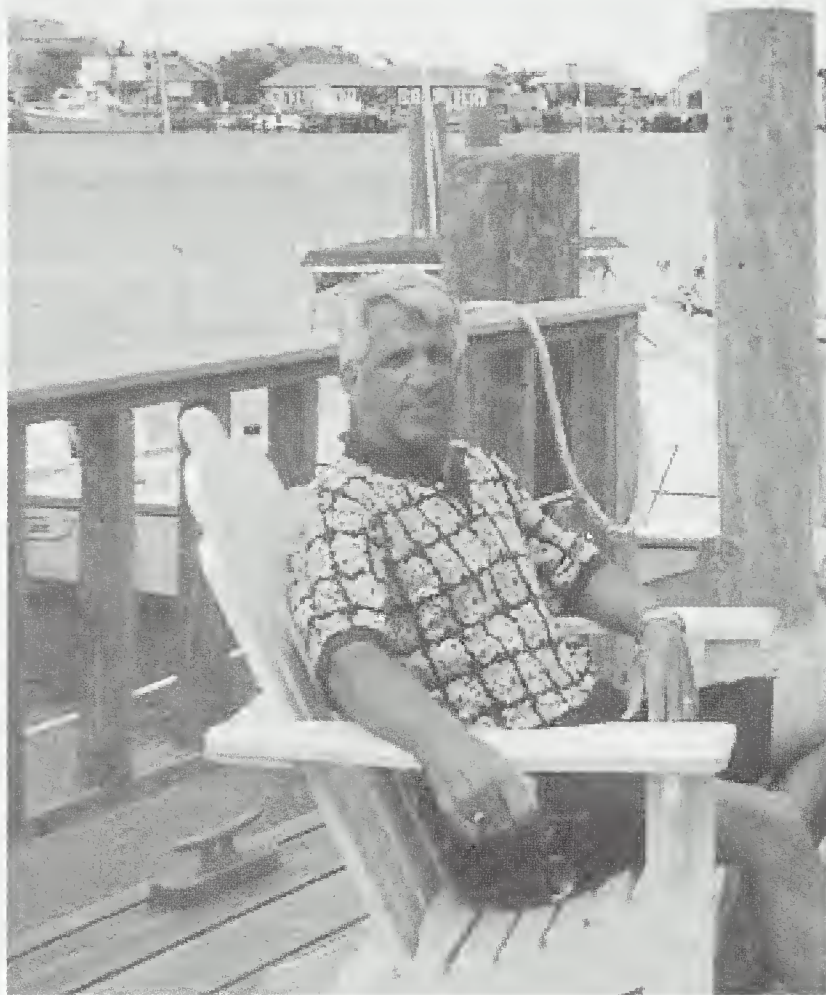
Quote: (Duke Marine Lab) "He gave us a long lecture before we started to pull specimens off the side of the dock telling us to be really careful of certain organisms because they would sting you, 45 minutes later he had the best specimens and his arms were swollen and red from recklessly brushing up against all the stinging organisms. He once hung off the back of the boat with the propeller going and used a bucket to scoop up some terror from the deep that was invariably the highlight of my day. He would say....'Never hang off the back of the boat with the propeller going', as he hung off the boat with the propeller going. He is the only professor I've ever had who was an absolute superhero to me!"

Quote: (England) "While biology is of utmost importance, he never failed to show us the humanistic side to science nor let us fail to experience contemporary culture and social and scientific history. We ate at the Eagle pub, Cambridge which Watson and Crick frequented, we visited the Linnaean society saw countless plays, London and its surrounding areas became our laboratory."

Quote: "While in London, he involved our entire group in many scientific field trips in and around the city. We went to the Museum of Natural history were he managed to book a backdoor tour of the facility. I still remember how excited he became while teaching and showing us specimens collected by Darwin on the Beagle's native voyage. He never once tired of our questions and his depth of knowledge continually amazes me as a student."

I could spend more time quoting from these letters, but they all say the same thing—this year's recipient is most deserving of this award. The Association of Southeastern Biologist proudly presented this most prestigious award to Dr. Ronald V. Dimock, Jr., of Wake Forest University.





Ronald V. Dimock, Jr., relaxing during a field trip.



Ronald V. Dimock, Jr., (left) receives the 2006 ASB Meritorious Teaching Award from committee chair Patricia B. Cox.

**ASB ENRICHMENT FUND AWARD****HIGH SCHOOL TEACHER HONORED****BRENDA ROYAL**

The ASB Enrichment Fund recognized the 2005 Outstanding Biology Teacher (OBT) from the state of Tennessee at the annual meeting of the association in Gatlinburg, Tennessee. Ms. Brenda Royal from Nashville, Tennessee, attended the meeting and was presented with a certificate and a check for \$500.00 from the Enrichment Fund Account at the Friday night awards banquet.

Brenda Royal is a graduate of Middle Tennessee State University, having received her B.S. with a double major in chemistry and biology in 1980, her M.S. in Biology in 1982, and Ed.S. in curriculum and instruction in 1995. She currently teaches Advanced Placement Biology and Anatomy and Physiology at Hume-Fogg Academic Magnet High School in Nashville. She was a finalist for the 1995 Tennessee Teacher of the Year, a finalist for the 2005 Metro Nashville Teacher of the Year, the 2005 Outstanding Biology Teacher from the State of Tennessee, and she was just told Wednesday that she is the recipient of the 2005-06 Siemens Awards for Advanced Placement for teachers in Tennessee. Her passion is getting students excited about learning science, about seeing the amazing interconnections in the study of biology, and making the links of textbook to real world. Her greatest joys are her teenage daughters, Julie and Emily, and her dogs, Dusty and Bailey.



Brenda Royal (left) receives the ASB Enrichment Fund Award from award committee chair Kim Marie Tolson.



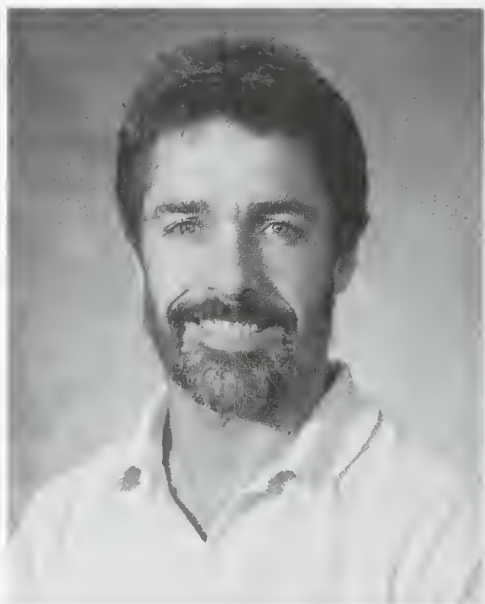
## 2006 RESEARCH AWARD RECIPIENTS

### ASB SENIOR RESEARCH AWARD

The ASB Senior Research Award sponsored by Associated Microscopes, Inc., Elon, North Carolina, was awarded to **Martin Henry H. Stevens**, Department of Botany, Miami University, Oxford, Ohio, for his manuscript entitled "Placing local plant species richness in the context of environmental drivers of metacommunity richness." The manuscript was published in the *Journal of Ecology*, 94:58-65, 2006. His paper presentation at the annual meeting is entitled the same as above, *SE Biology Abstract* 63, 53(2).

Award committee chair, Lisa Kelly, submitted the following autobiography of Martin Henry Hoffman Stevens.

Hank spent formative years in the Adirondack Mountains, where his love for the natural world and its biodiversity grew strong. During his high school years, he attended Phillips Exeter Academy, and then went on to the University of New Hampshire, where, oddly enough, he majored in psychology, with a minor in dance. He went on to dance with several ballet companies, finishing up for five seasons with Pittsburgh Ballet Theater. He then went on to graduate work in ecology and evolutionary biology at the University of Pittsburgh, completing an M.S. on stream-landscape interactions with Kenneth Cummins. His interest in the controls on plant communities grew out of this work, and his Ph.D., with Walter Carson, tested mechanisms by which productivity and soil resources influence plant species diversity. This work now appears in two recent ecology textbooks. He spent two years as a postdoctoral researcher in the lab of Peter Morin at Rutgers University, where he began to use laboratory microcosms to study the effects of temperature and light on the diversity of both eukaryotes and prokaryotes. Hank is currently at Miami University, residing in Oxford, Ohio, with his wife, two children and multitude of pets. Hank, and his student and faculty colleagues, continue to study the effects of environmental factors and resources on plant and microbe biodiversity and food web dynamics. They use a wide variety of model systems, from field experiments in herbaceous plant assemblage, to *Escherichia coli* cultures, to mathematical models.



ASB Senior Research Award recipient  
Martin Henry H. Stevens.



### ASB STUDENT RESEARCH AWARD

The ASB Student Research Award sponsored by the Martin Microscope Company, Easley, South Carolina, was presented by award committee member Dennis Haney (for committee chair Katie Greenberg) to **Christie Bobowski**, Department of Biology, Furman University, Greenville, South Carolina, for her paper co-authored with Eli V. Hestermann entitled "Combinatorial gene regulation by the estrogen and aryl hydrocarbon receptors," *SE Biology Abstract* 49, 53(2).



Christie Bobowski (left) receives the ASB Student Research Award from award committee member Dennis Haney.

### BROOKS/COLE STUDENT RESEARCH AWARD IN AQUATIC BIOLOGY

The Brooks/Cole Student Research Award in Aquatic Biology sponsored by the Thomson Learning Brooks/Cole Publishing Company, Belmont, California, was presented by award committee member Dennis Haney (for committee chair Katie Greenberg) to **Anna J. Phillips**, Department of Biology, Appalachian State University, Boone, North Carolina, for her paper co-authored with Mark E. Siddall of the American Museum of Natural History entitled "Phylogeny of the New World medicinal leech family Macrobdellidae (Oligochaeta: Hirudinida: Arhynchobdellida)," *SE Biology Abstract* 142, 53(2).



Anna J. Phillips (left) receives the Brooks/Cole Student Research Award in Aquatic Biology from award committee member Dennis Haney.

The student awards committee also singled out the following two paper presentations for honorable mention.

1. **Sarah E. Johnson** and **Claudia L. Jolls**. Department of Botany, University of Wisconsin, Madison, and Department of Biology, East Carolina University, Greenville, North Carolina. "An assessment of the role of competition on the beach as a factor in the distribution of *Amaranthus pumilus* Raf. (Amaranthaceae)," *SE Biology* Abstract 151, 53(2).

2. **Christopher G. Brown** and **Daniel J. Funk**. Department of Biological Sciences, Vanderbilt University, Nashville, Tennessee. "Fecal-case associated behavior and life history of *Neochlamisus* leaf beetles," *SE Biology* Abstract 147, 53(2).



Christopher G. Brown (left) receives an honorable mention certificate from student research award committee member Dennis Haney.

### **ASB RESEARCH AWARD IN MICROBIOLOGY**

The ASB Research Award in Microbiology sponsored by the Thomson Learning Brooks/Cole Publishing Company, Belmont, California, was presented by award committee chair Donald H. Roush to **Angela R. Scarborough**, Department of Biology, Central Missouri State University, Warrensburg, Missouri, for her paper entitled "Species assemblages of tree canopy myxomycetes related to bark pH," *SE Biology Abstract* 79, 53(2). (See photo next page.)

### **ASB STUDENT POSTER AWARD**

The ASB Student Poster Award sponsored by ASB was presented by award committee chair Victoria Turgeon to **Kristen Ammay**, Department of Biology, Furman University, Greenville, South Carolina, for her poster co-authored with Dennis Haney, John Wheeler, and Clarymar Ortiz of the Universidad Metropolitano entitled "Evaluating the presence of estrogen in wastewater treatment plant effluent in the Broad River watershed, South Carolina," *SE Biology Abstract* P17, 53(2). (See photo next page.)





Angela R. Scarborough (left) receives the ASB Research Award in Microbiology from award committee chair Donald H. Roush.



Kristen Ammay (right) receives the ASB Student Poster Award from award committee chair Victoria Turgeon.

## THE NORTH CAROLINA BOTANICAL GARDEN AWARD

The North Carolina Botanical Garden Award sponsored by the NCBG made two awards this year for the first time. The first award was presented by award committee chair Johnny Randall to **Susan B. Farmer**, Department of Ecology and Evolutionary Biology, University of Tennessee, Knoxville, for her paper co-authored with Edward E. Schilling entitled "Status of the *Trillium pusillum* species complex," *SE Biology Abstract* 179, 53(2).

The second award was also presented by award committee chair Johnny Randall to **Wade A. Wall**, Department of Botany, North Carolina State University, Raleigh, for his paper co-authored with Thomas R. Wentworth and William A. Hoffmann entitled "Vegetation and soils of a North Carolina Coastal Plain wet savanna," *SE Biology Abstract* 264, 53(2).



Susan B. Farmer (right) and Wade A. Wall (left) each receive the North Carolina Botanical Garden Award from award committee chair Johnny Randall (center).

## EUGENE P. ODUM AWARD

The Eugene P. Odum Award sponsored by the Southeastern Chapter of the Ecological Society of America was presented by award committee chair Nicole Turrill Welch at the Friday ESA/SE luncheon to **Daniel M. Johnson**, Department of Biology, Wake Forest University, Winston-Salem, North Carolina, for his paper co-authored with William K. Smith entitled "Effects of cloud immersion on



understory light environment and photosynthesis in the southern Appalachian Mountains (USA)," *SE Biology Abstract* 164, 53(2).



Daniel M. Johnson winner of the Eugene P. Odum Award is shown conducting field research.

### **ELSIE QUARTERMAN-CATHERINE KEEVER AWARD**

The Elsie Quarterman-Catherine Keever Award sponsored by the Southeastern Chapter of the Ecological Society of America was presented by award committee chair Frank S. Gilliam at the Friday ESA/SE luncheon to **Angela R. Scarborough**, Department of Biology, Central Missouri State University, Warrensburg, Missouri, for her poster entitled "Tree canopy myxomycetes: patterns of distribution," *SE Biology Abstract* P131, 53(2).





Angela R. Scarborough (left) winner of the Elsie Quarterman-Catherine Keever Award with award committee chair Frank S. Gilliam.

### **SOCIETY OF WETLAND SCIENTISTS SOUTH ATLANTIC CHAPTER STUDENT TRAVEL AWARD**

Award committee chair Mary Davis and chapter chair Gregory Noe reported that Masamichi Ogasawara and William Chapman were the recipients of travel awards to the annual ASB meeting from the South Atlantic Chapter of the Society of Wetland Scientists. Masamichi Ogasawara gave an oral presentation and is currently a doctoral student at Clemson University. William Chapman presented his poster and is a Cadet/undergraduate researcher at The Citadel. Award recipients must be currently enrolled students, conduct research pertaining to wetland science, and present their research at the ASB annual meeting. Each student was presented with a \$250 check by Dr. Greg Noe, Chapter Chair, at the Chapter luncheon on Thursday, March 30, 2006.

1. **Masamichi Ogasawara**, Department of Biology, Clemson University, Clemson, South Carolina, for his paper entitled "A comparison of spatial variability associated with ephemeral wetland ponds in the Duke Forest, North Carolina," *SE Biology Abstract* 37, 53(2).

2. **William Chapman**, Department of Biology, The Citadel, Charleston, South Carolina, for his poster co-authored with Shane Kersting, Danny J. Gustafson, and Jennifer Beck of the College of Charleston, entitled "Is the grass greener on the other side of the road? Characterizing primary producers, primary

and secondary consumers in two marshes separated by an earthen causeway," *SE Biology* Abstract P111, 53(2).



Society of Wetland Scientists South Atlantic Chapter Student Travel Award winner Masamichi Ogasawara conducting research.



Society of Wetland Scientists South Atlantic Chapter Student Travel Award winner William Chapman (right) receives the award from chapter chair Gregory Noe at the Thursday chapter luncheon.





Society of Wetland Scientists South Atlantic Chapter Student Travel Award winner William Chapman (left) with mentor professor and SWS member Danny J. Gustafson at the Friday night banquet.

## SOUTHERN APPALACHIAN BOTANICAL SOCIETY AWARDS

Howard S. Neufeld, President of SABS, presented awards in three categories at the SABS/BSA Friday morning breakfast/business meeting, and announced the names of the awardees at the Friday night awards banquet.

### Earl Core Student Award

Dr. Earl Core was a major force in the founding of the Southern Appalachian Botanical Club in 1936. The annual Core Student Award was established by the Society to provide financial assistance in support of student research projects in plant taxonomy, systematics, and ecology. The application deadline is February 1<sup>st</sup> each year. Two awards were presented this year.

1. **Julie Wyatt**, Department of Biology, Wake Forest University, Winston-Salem, North Carolina. Limiting similarity among coexisting species in the herbaceous layer of Southern Appalachian cove forests. Research Advisor: **Miles R. Silman**.

2. **Joy van Der Vort-Sneed**, Department of Biology, Appalachian State University, Boone, North Carolina. Species delineation of two imperiled wild gingers (*Asarum contracta* and *Asarum rhombiformis*) using morphology, molecules, and pollinators. Research Advisor: **Zack Murrell**.





Julie Wyatt (left) and Joy van Der Vort-Sneed (center) winners of the SABS Earl Core Student Award with SABS President Howard S. Neufeld.

### Richard and Minnie Windler Award

The Richard and Minnie Windler Award was established in 1990 at the annual meeting of the SABS by Dr. Donald R. Windler of Towson University as a memorial to his parents. The award is presented annually to the author or authors of the best systematic botany paper published in *Castanea* during the previous year. The eligible papers may fall into the broad area of plant systematics, including floristic, experimental, revisionary, and nomenclatural studies.

The recipients of the award this year are:

**Kerry D. Heafner**, Botany Division, Museum of Natural History and Department of Biology, The University of Louisiana at Monroe, Monroe, Louisiana; and **Rebecca D. Bray**, Department of Biological Sciences, Old Dominion University, Norfolk, Virginia, for their paper entitled "Taxonomic reassessment of North American granite outcrop *Isoetes* species with emphasis on vegetative morphology and *I. piedmontana* (Pfeiffer) Reed *Sensu lato*" published in *Castanea* 70(3): 204-221 (September, 2005).



Rebecca D. Bray (right) one of the winners of the SABS Richard and Minnie Windler Award with SABS President Howard S. Neufeld.

### **Elizabeth Ann Bartholomew Award**

The Society annually presents this Award in memory of Elizabeth Ann Bartholomew's untiring service to the public, to plant systematics, and to this organization. This award is presented to individuals who have also distinguished themselves in professional and public service that advances our knowledge and appreciation of the world of plants and their scientific, cultural, and aesthetic values, and/or exceptional service to the society. The 2006 award goes to **Joe E. Winstead**, Dean, College of Science and Technology, Southern Arkansas University, Magnolia, Arkansas.

A detailed presentation of Dr. Winstead's accomplishments will be presented in the September, 2006 issue of *Castanea*.





Joe E. Winstead (right) winner of the SABS Elizabeth Ann Bartholomew Award with SABS President Howard S. Neufeld.

### **BOTANICAL SOCIETY OF AMERICA SOUTHEASTERN SECTION STUDENT AWARD**

The Botanical Society of America Southeastern Section Student Award sponsored by the SE Section of the BSA was presented by Lytton John Musselman to **Brett A. McMillan**, Department of Biological Sciences, Old Dominion University, Norfolk, Virginia, for his paper co-authored with Frank P. Day entitled "Determinants of floristic structure on the 'pimple' dunes of Virginia's barrier islands," *SE Biology* Abstract 77, 53(2). (See photo next page.)

### **SOUTHEASTERN MICROSCOPY SOCIETY AWARDS**

**Ruska Award** – The purpose of the Ruska Award is to recognize and reward student excellence in research in which microscopy is used as a research tool in biological and/or physical sciences. The Ruska Award is given to the best student presentation at the annual meeting. Ruska participants are required to send a written abstract with illustrations prior to the annual meeting and give an oral presentation at the meeting.

The winner of the Ruska Award for 2006 is **Sangmi Lee**, Department of Biological Sciences, Mississippi State University, Mississippi State, Mississippi. The award was presented by the President of SEMS Judy King.





Brett A. McMillan (left) receives the Botanical Society of America Southeastern Section Student Award from award committee chair Lytton John Musselman.



From left to right: Sangmi Lee, winner of the Ruska Award, Jennifer Seltzer, Ruska Award Participant, and Judy King, President of SEMS.

**Distinguished Scientist Award** – The Distinguished Scientist Award is given to members of longstanding who exemplify personal and intellectual integrity, perennial scholarship, contributions to the field of microscopy, excellence in teaching and service to the society above and beyond the call of duty. The award is not given on a regular basis, but only at such times as individuals are identified by nomination.

No award was given in 2006.

**Distinguished Corporate Member Award** – The purpose of the Distinguished Corporate Member Award is to recognize and show appreciation to corporate members of longstanding. The award is not given on a regular basis, but only at such times that corporate members are nominated.

No award was given in 2006.

**Roth-Michaels Teaching Award** – The purpose of the Roth-Michaels Teaching Award is to honor the contributions and commitment of two of our members, Dr. Ivan Roth and Dr. Gene Michaels, to microscopy education. Candidates for the Roth-Michaels award should have exemplified excellence in the teaching of microscopy at the primary and/or secondary levels of education. The award will be given only at such times as individuals are identified by nomination.

The winner of the award for 2006 is **Charles W. Mims**.

**Jerry Paulin Lectureship Award** – The purpose of the Jerry Paulin Lectureship Award is to provide funding for an outstanding lecturer in any area of microscopy to attend and present a one-hour presentation at the annual meeting. These presentations should be held only when a candidate has been identified and funding is available to support a candidate.

No award was given in 2006.

### **Micrograph Competition**

The winner of the competition for 2006 is **Sangmi Lee**.

### **Student Poster Award**

The winner of the award for 2006 is **Murali Ayyanath**.

### **SEMS Technician Travel Support Awards**

The recipients of the award for 2006 are **Beth Richardson, Mary Ard, Vera Lanke**, and **Cathy Pennington**.

For more information about SEMS awards, please check the website at <http://www.semicroscopy.org>.

**BETA BETA BETA BIOLOGICAL SOCIETY SOUTHEASTERN REGION  
OUTSTANDING PAPER AND POSTER AWARDS**

**District I Paper Session  
Frank G. Brooks Paper Award Winner**

**Ian K. Breckheimer**, Sigma Phi, Guilford College. "The invasive vine *Akebia* (*Akebia quinata*) at Guilford College: Niche, impact, and potential for further spread."

**District II Paper Session  
Frank G. Brooks Paper Award Winner**

**Lakesha Johnson**, Eta Mu, Southern University, Baton Rouge. "How the brain locates a sound in space." Michael Anderson, Ph.D. (Mentor) Johns Hopkins University School of Medicine.

**District I and II Paper Session  
Frank G. Brooks Paper Award Winner**

**Lena D. Caron**, Sigma Pi, Guilford College and Harvard Institutes of Medicine. "RNA interference in human vascular cells achieved via rapid pressure transfection with silencing RNA."

**District I Poster Session  
John C. Johnson Poster Award Winner**

**Damian Rumbough**, Beta Eta, Florida Southern College. "The positive effect of a recently created wetlands on species diversity."

**District II Poster Session  
John C. Johnson Poster Award Winner**

**In Ki Cho**, Mu Epsilon, Troy University. "Lead acetate exposed *Saccharomyces cerevisiae*—gene expression and growth of deletion strains."

**SOUTHEASTERN DIVISION, AMERICAN SOCIETY OF  
ICHTHYOLOGISTS AND HERPETOLOGISTS  
AND SOUTHEASTERN FISHES COUNCIL**

These two ASB affiliates met with the ASIH in New Orleans this year and presented their respective awards at that meeting.



## AWARDS FROM THE AMERICAN SOCIETY OF ICHTHYOLOGISTS AND HERPETOLOGISTS

### 2005 AWARDEES

#### Robert H. Gibbs, Jr. Memorial Award

Presented for excellence in systematic ichthyology. In July 2005, at the ASIH annual meeting in Tampa, Florida, the award was presented to **Dr. Theodore W. Pietsch**, University of Washington at Seattle. Dr. Pietsch has worked on many diverse fish taxa with a special interest in male sexual parasites. He has been involved with many international expeditions.

#### Henry S. Fitch Award

Presented for excellence in herpetology. In July, 2005, at the ASIH annual meeting in Tampa, Florida, the award was presented to **Dr. Margaret Stewart**, Professor Emeritus, State University of New York at Albany. Dr. Stewart's most famous research was numerous herpetological field studies conducted in Puerto Rico on a small, abundant, and vociferous anuran. She published many papers in several journals including on the biology of *Eleutherodactylus coqui*

#### Robert K. Johnson Award

Presented for excellence in service. In July 2005, at the ASIH annual meeting in Tampa, Florida, the award was presented to **Dr. Margaret McBride Stewart**, Professor Emeritus, State University of New York at Albany. Dr. Stewart has a long, distinguished record of service to the ASIH. She has served as a reviewer for *Copeia*, has reviewed books for *Copeia*, has served on the Editorial Board, and served a three-year term as General Herpetology Editor. She has served on many committees of the ASIH, served several years on the ASIH Board of Governors, served as the President, served five years as the Historian, and has been an active participant at annual ASIH meetings.

#### Raney Fund Awards

Awards of \$1,000 were made to each of the following five young ichthyologists in 2005. They are listed by name, institution, and title of proposed research.

**Benjamin Ciotti**, University of Delaware, "Spatial variability in growth and diet of juvenile plaice: Predator-prey linkages in dynamic nursery environments."

**Donovan German**, University of Florida, "What does it take to eat wood: Mechanisms of digestion in closely related armored catfishes (Loricariidae) representing algivory, herbivory, and xylophagy."

**Shannon Gerry**, University of Rhode Island, "A comparison of feeding morphologies and behaviors in a generalist and specialist shark species."

**Erin Reardon**, McGill University, "Effects of hypoxia on the life history and energetics of the African Cichlid *Pseudocrenilabrus multicolor*."

**Takashi Maie**, Clemson University, "Relationships of feeding morphology and performance to habitat distribution in Hawaiian stream gobies: *Awaous guamensis* and *Lentipes concolor*."

### Gaige Fund Awards

Awards of \$500 were made to each of the following 10 young herpetologists in 2005. They are listed by name, institution, and title of proposed investigation.

**Lelena Avila**, Indiana University, "Why do *Thamnophis sirtalis* eat toxic newts?"

**Nathan Calder**, University of Central Oklahoma, "Do neuropeptides mediate alternative reproductive tactics in male collared lizards?"

**Jena Chojnowski**, University of Florida, "Identifying candidate genes for temperature-dependent sex determination in the red-eared slider turtle, *Trachemys scripta*."

**Paula Kahn**, Auburn University, "Gopher tortoise (*Gopherus polyphemus*) relocation: Effects of stress, immunocompetence, and reproduction."

**Daria Koscinski**, University of Western Ontario, "Comparative phylogeography of Andean frogs."

**Gregory Pauly**, University of Texas, "Sexual selection and mating signal evolution in the western toad, *Bufo boreas*."

**Daniel Rabosky**, Cornell University, "Rampant parallel evolution of color pattern in a clade of Australian skinks."

**Jennifer Sheridan**, University of California San Diego, "Reproductive variation across latitude for a wide-ranging tropical species."

**Justin Touchon**, Boston University, "Does an embryo's environment alter later tadpole interactions with predators?"

**Jessa Watters**, University of New Hampshire, "A test of optimal foraging theory in two lizard species: *Sceloporus virgatus* and *Sceloporus jarrovii*."

Justin Touchon received a warm round of applause as he came forward to accept his certificate.

### Stoye Awards

Awards for best oral presentations were made to each of the following five students in 2005. Each winner received a cash award of \$250, a certificate, and all available back issues of *Copeia*. They are listed by name, institution, category, and title of oral presentation.

**Tanya Darden**, University of Southern Mississippi, Conservation, "Dispersal in Enneacanthini sunfishes: A test of wetland regulatory assumptions".

**M. Rockwell Parker**, Oregon State University, Ecology and Ethology, "Revealing greater complexity in rattlesnake chemical ecology: Change is in the air."

**Rebecca Blanton**, Tulane University, General Ichthyology, "The geographic distribution of genetic diversity in the *Etheostoma flabellare* species complex (Percidae, *Catnotus*) from the lower Atlantic Slope River drainages of North and South Carolina."

**Lisa Lobel**, University of Massachusetts, Genetics, Development, and Morphology, "Field studies evaluation of developmental and reproductive effects of chemical exposure in the coral reef fish, *Abudefduf sordidus* (Pomacentridae)."

**Rita Mehta**, University of Tennessee, Physiology and Physiological Ecology, "Comparative epaxial motor patterns in snakes during constriction."

### Storer Awards

Awards for best poster presentations were made to each of the following two students in 2005. Each winner received a cash award of \$250, a certificate, and all available back issues of *Copeia*. They are listed by name, institution, category, and title of poster presentation.

**Krista Larson**, Purdue University, Herpetology, "Call complexity in northern leopard frogs: Are males advertising beauty or brawn?"

**Kurtis Gray**, Virginia Institute of Marine Science, Ichthyology, "Population genetic structure of the marlinsucker, *Remora osteochir* (Perciformes: Echeneidae) inferred from mitochondrial control (D-loop) DNA sequence analysis."



Local Arrangements Committee at the Friday night banquet. From left to right: Jim Caponetti, Ed Lickey, Pat Cox, Scott Jewell, and Randy Small.



**WOMEN, MINORITIES, AND PEOPLE OF DISABILITIES  
LUNCHEON AND WORKSHOP**

**Identifying Careers in Biology  
March 30, 2006**

Submitted by Pat Parr, 2005/2006 Chair of the ASB Committee for Human Diversity and Natural Resources Manager, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

A workshop on "Identifying Careers in Biology" held at the 2006 ASB meeting in Gatlinburg was very successful with almost 60 students, faculty, and other professionals participating from about 30 different institutions. Four inspiring individuals, shared information on careers in biology drawing from their varied backgrounds and experiences. The response was so enthusiastic that a request was made for Dr. Barb Kreutzer, Dr. Gillian Bowser, Dr. Judith Wubah, and Dr. Robert Washington-Allen to provide their comments for publication in *Southeastern Biology*.

Additionally, posters were provided to participants that Dr. Barb Kreutzer had acquired from Ventura College, California, on "What Can You Do with Your Biotechnology Skills." Contact Mary Pat Huxley [mp\\_huxley@vcccd.net](mailto:mp_huxley@vcccd.net) for copies of the biotechnology poster. With permission, the James Madison Creative Arts Studio modified the poster as "What Can You Do With a Biology Degree" and a pdf file of this poster is available from Pat Parr at [parrpd@ornl.gov](mailto:parrpd@ornl.gov).

**Dr. Barbara B. Kreutzer** is Professor of Biotechnology with the Department of Integrated Science and Technology at James Madison University, Harrisonburg, VA 22807. She can be reached by email at: [kreutzbb@jmu.edu](mailto:kreutzbb@jmu.edu).

Thank you all for coming to the Identifying Careers in Biology Workshop. Pat asked us to describe our own biology career story. My career story can best be summed up by the quote "The best laid plans ... oft go astray." However, my biology degrees have always landed me on my feet.

How many of you have ever wondered, what am I going to do with my life? I know I have. Science and the outdoors were a focus of my interests when I was growing up. My parents, who had my best interest at heart, stressed that I could do whatever I wanted but to make sure that I could support myself when I graduated. I received a Bachelor of Arts in Biology from the University of Virginia. Biology because I was fascinated by the field, and a Bachelor of Arts both because I was primarily interested in plant science, not medical topics, and so, if possible, stayed away from courses packed with premed students. Also, I wanted to receive a broad Liberal Arts education.

By then I had decided to do research and teach at the university level and so wanted to go to graduate school. My parents again helped me define my career my telling me, "That's great, but you need to pay for it yourself." I devised a plan to get a Master of Science in Plant Pathology and work as an extension agent to

save money for a Ph. D. program of study. I received my M.S. in Plant Pathology from Virginia Tech but then ran into a small glitch. At that time, the Extension Service, preferring good, ol' country boys, was not interested in hiring women as extension agents. This field is much more open to women today and I highly recommend it if you enjoy working with the public and practical applications of biology. Instead, I worked and saved money as first a lab technician for a university professor and then as a lab manager for a pharmacology-related research position.

After a few years, I earned my Ph.D. in Botany from Ohio University (where I had some truly excellent mentors) and taught for a few semesters. However, family responsibilities prompted me to drop out of the workforce for quite a while. During this time, my biology degrees proved themselves immensely useful. It's true that knowledge is power. My biology background put me in a much better situation to handle a growing family and health problems associated with aging parents. Especially the discipline, attention to detail, critical thinking and math skills gained by studying a science provided me with the abilities and confidence to deal with a multitude of personal and community situations. Everything from the everyday challenges of managing a family to organizing, fund-raising and implementing community projects. After our children were older, I reentered the workforce. My biology degrees made it easy to resume teaching and university research.

That's one person's story. To give you some more direction, here are some jobs and career paths my friends and students have chosen.

Many take lab technician and quality control jobs in academia, forensics or the pharmacology, agribusiness or food industry. Their initial placement is frequently in temp placement firms. Yes, there actually is a Kelly Scientific and they have hired a lot of our students! For those not interested in lab jobs, field positions such as environmental testing, environmental remediation system design, plant population and disease monitoring are popular. Law firms, consulting firms and government agencies which deal with biotechnology and environmental policy issues hire many of our graduates. Elementary, middle and high school science programs are also popular. Biotechnology, agribusiness and biological product companies like to hire biologists for sales, marketing, public relations and technical writing positions. Cartography agencies hire some of our ISAT program graduates to do vegetation mapping.

According to the Bureau of Labor Statistics ([www.bls.gov/oes](http://www.bls.gov/oes)), typical salaries for a graduate with a Bachelor of Science in a Life Science range from \$32,000 – \$90,000 (not including medical fields). In the federal government, for 2003, the following average salaries are listed for several common fields:

General biologist	\$66,000	Microbiologists	\$74,000
Ecologists	\$65,000	Physiologists	\$85,000
Geneticists	\$78,000	Zoologists	\$90,000
Botanists	\$56,000	Biochemists	\$72,000

I would like to emphasize again that biology degrees have worked well for my friends, students and myself in all phases of our lives. Follow your passions.

There is a lot you can do with your biology skills, have a rewarding career and pay the rent. I'm living proof.

The following is a list of jobs for which our ISAT students have been hired in the past five years. If you need further information, feel absolutely free to contact me. I'd be happy to provide you with additional information.

Students have been hired as ....

- Plant biology researchers – academic and commercial positions
- High school, middle school, elementary school science teachers
- Research consultant for futures firm
- Statistician
- Quality control specialists for industries which manufacture biological and environmental products
- Lab technicians for industries dealing with biological products and biotechnology firms
- Environmental testing agents – soil and water
- Environmental remediation system designer
- Extension agents
- Plant epidemiologist - field sampling for state extension offices
- Researchers for lobbying agencies at the Federal Level and consulting firms
- Public affairs specialist for the National Forest, Regional Offices
- Field scientists for the National Park Service
- Cartographers (map-making) and Geographic Information System analysts
- Technical writers and Information System and Web Design



**Dr. Gillian Bowser** is the National Park Service Liaison and Research Coordinator, Gulf Coast Cooperative Ecosystem Studies Unit, Texas A&M University in College Station, Texas. Her email is: gbowser@tamu.edu.

I always wonder what my own job description would look like if it truly reflected my career. Students are always asking what skills do they need to get a wildlife biologist job with the National Park Service and which classes they should take. I can see the potential job announcement for my position and career in my mind's eye:

**JOB OPPORTUNITY:** *We are looking for someone with the following critical skills:*

1. *Ability to outrun the tranquilized elk that just woke up and is extremely annoyed at the researchers,*
2. *Climb a tree faster than the bear just released from a culvert trap and who is not appreciative of that mode of transportation,*
3. *Fly in a two-seater Piper Supercub with an antennae on either wing, swooping after collared animals in canyons and not lose ones lunch on the microphone connected to the pilot,*



4. *Able to navigate sandpits and streams without burying the research vehicle above the headlights,*
5. *Able to navigate on the flat Dakota Plains in the dark and find not only the transect line and small pieces of rebar, but also relocate the black truck on the flat plains at 3 AM in the morning, and*
6. *Able to identify any organism correctly or incorrectly to visiting political dignitaries.*

*SKILL SETS NEEDED: Energy, Enthusiasm, love of adventure. Poverty is optional but likely.*

*HOW TO APPLY: Applicants must navigate to application site using GPS, Remote Sensing, a compass and dead reckoning. Homebodies need not apply.*

While I am speaking somewhat in jest, a career in conservation and wildlife biology is not as simple as taking classes in mammalogy and I find increasingly that students are ill-prepared mentally for working as a field biologist. I firmly believe that a student equipped with a sense of adventure, willingness to grow, a love of sunsets and the ability to wonder, will excel in wildlife biology. Classes and schoolwork are only a foundation, one simply must take that first adventuresome step outside ones comfort zone. My own background is most telling as I started out with limited skill sets and certainly less of an outdoor sense than most of the students in this audience!

I grew up in Brooklyn, New York, and attended the High School for Music and Performing Arts (better known as Fame) in Harlem. My original interests were in art and medical illustration and I dreamed about being an illustrator for Grey's Anatomy or a vet's guide to horses, as they were my favorites to draw. I ended up at a strong biology school (Northwestern University in Chicago) with a major in medical illustration.

Wildlife biology and the field of conservation biology are fascinating in that nothing you learn at school has any relevance for that first field experience. Northwestern University has an excellent ecology program that inspired me to want to work with animals more directly than drawing them. Yet these classes were hardly the survival skills I needed when I arrived at my first wildlife biology job. As a New York City urban kid, I was very adept at navigating through New York City subways, could out sprint a potential mugger in Central Park, and could identify flashers on the subway from normal guys in trench coats with a single glance. However, even with those survival skills and an impressive roster of classes in cellular biology, I was woefully ill prepared for my first job in the wildlife field and had a 20-year old backpack from my dad.

I believe it safe to say that most field biologists fall into their jobs by chance, a sense of adventure, and good timing. During my sophomore year in college, my father mailed me an announcement for concession jobs in Yellowstone National Park. He was a man of few words so the accompanying note said little more than "look at this" which was his way of endorsing his youngest daughter's love of adventure. My first job was not in wildlife biology but as a room clerk in a hotel in Yellowstone National Park—an adventure that I delighted to partake in. When I went to purchase my Greyhound ticket from New York City to Livingston

Montana, neither the ticketing agent, nor myself could find Montana on the map much less the tiny town of Livingston. It was a 72-hour adventure on a Greyhound bus meeting folks from all walks of life united simply by the rumble of wheels, long dusty roads, and that sense of adventure approaching in the horizon.

My first position in Yellowstone was not a dream job but it exposed me to the National Park Service, an agency I was completely unfamiliar with except through vague memories of a subscription to Ranger Rick magazine my grandmother once got me. However, through this first adventure, I chanced to meet the resource management specialist of the park and I offered to volunteer in the field just for the experience. He invited me back the following summer and my first job was to inventory all the backcountry campsites in the park onto computer punch cards—a technology no student today has even heard of! My crew was to spend three months backpacking to every one of the 352 backcountry campsites in Yellowstone and recording their condition on these cards. I had never been backpacking before. During our first trip, the crew decided a tent was too heavy and we would sleep under the stars. I remember waking early in the morning to the sounds of something very large breathing right next to my head. “BEAR!” I thought, “It must be a grizzly bear! I am from New York! I can deal with heavy breathers in subway cars wearing trench coats but a BEAR!” I was in total panic—I couldn’t get out of my sleeping bag and the bear was so very close that I could hear every breath. I slowly pried open my eyes, peeked carefully out of my sleeping bag and stared up the nose of a very large...bull moose.

I spent eleven years in Yellowstone and Teton National Parks and the adventures were many. I thrived with each new challenge and grew in skills and competence in outdoor skills and self survival. Each project we were assigned as a crew of wildlife biologist became a new skill set and learning experience. How do you dart a moose and outrun it when you miss? How do you track a collar’s signal in a small aircraft that is swooping and turning up and down canyons and not get sick? And most importantly, when the Director and local congressmen come to view your study on elk and moose winter mortality, be able to say with perfect confidence and aplomb that of course you can identify the urine samples needed for nutritional work by species because they smell differently. But mostly my love of adventure allowed me to enjoy the challenges of each new conservation task I was assigned to and perhaps gave me the freedom to admit I didn’t know a skill and ask questions.

I look back at a good career in conservation and wonder what advice I could give today’s students as they explore career options that might include conservation. I think there are perhaps four factors that I would pass on.

**Go for the adventure.** When I first left New York City, I thought Chicago might be a wilderness. My grandmother, who had never been outside of New York State, would send me care packages of peanut butter and chocolate chip cookies, just in case such things didn’t exist in the wilds of Chicago. Leaving Chicago for Montana was even a bigger adventure. In my first winter in Montana, I won an award for the best Free Style turn on an Arctic Cat (snowmobile) after managing to spin the thing 360 degrees, lose the front skid and somersault down the road unharmed. One summer I was tracking moose in a Supercub two-seater



airplane. We soared up and down canyons tipping the antennae mounted on wings up and down, flipping the aircraft with each move. We soared up the wall of one canyon and as we burst into the open blue sky, we startled a grizzly bear at breakfast. So many adventures in one career—all perhaps topped by a giant panda in Woolong, China, offering to share his half chewed apple as I stood beside him in a glorious moment of being able to touch that rare animal.

**Go for the growth.** As I said, I was always good at navigating and enjoyed maps early on, so I was on the alpine search and rescue team for Yellowstone and Tetons and we would get called out to search for lost souls in the woods. These searches were often periods of great inner growth as we raced against odds to find people lost often in snowstorms or mountain tops. I recall facing the deep sorrow of human cruelty when we searched all night for a five-year old girl supposedly lost in a snow storm in Wyoming. Somehow, when we all saw her picture at the Sheriff's office, we knew in our hearts, she was already dead—I cannot explain such knowledge, but we found her dead by her stepfather's hand early the next grey morning. Later, those same skills took me home to New York, and I grew profoundly as I stood at Ground Zero on September 12 as part of the emergency team assessing national park resources. I will always see in my mind the inside of Federal Hall National Historic Site which was covered with thick dust patterned with the footprints of refugees fleeing the collapsing towers.

**Go for the Sunsets.** Conservation biology does not pay the best salary, but, as old rangers say, we get paid in sunsets. How can one put a price tag on getting invited to China as a wildlife biologist to work on world heritage sites, and have that giant panda offer you his apple as you stood inside his cage? What is the bonus in dollars of hiking down a long trail on a project, then returning an hour later to find huge grizzly bear footprints on top of your own, and never seeing the bear? What is the price of the joy of watching dawn break on the South Dakota Plains and see a sleepy golden eagle casually starting his morning with a prairie dog snack? But the best payment of all is being able to take the next generation of children to Joshua Tree National Park and show them an ancient desert tortoise lumbering across the desert with the faded outline of a numbered tag you placed on his back ten years ago. Those payments in sunsets are better than any bank account in my view.

**Go for the wonder.** We forget the sheer joy of wonderment. When the beauty of dawn in the bottom of the Grand Canyon makes your heart ache with pain—that is wonder. When you find yourself in silent tears when the Mojave desert bursts into an intense El Nino-induced spring bloom unsurpassed in over 40 years—that is wonder. And lastly, the incredible inner warmth that flows to your frost-bitten toes, when you finally spy the little log patrol cabin, after a 15 mile ski through a snowstorm—is sheer beauty,

Explore, be adventurous, grow and wonder. Take the first step by signing up for an internship at a park to do something you would never dream of doing, at a place you can't find on the map, and see where it leads you. When I left New York City, I had no wildlife skills. Now I train wildlife biologists and have searched the woods for lost hunters who were usually mortified to be found and rescued by an inner city urban concrete jungle kid like me!



**Dr. Judith A. Wubah** is Assistant Professor of Developmental Biology with the Department of Biology at James Madison University in Harrisonburg, VA 22807. She can be reached by email at: [wubahja@jmu.edu](mailto:wubahja@jmu.edu).

Thank you for inviting us to speak at this workshop on "Identifying Careers in Biology". My talk will fit in between those of our two previous speakers. As you can all tell, my accent is from South Georgia. I am originally from Ghana, West Africa where I obtained my undergraduate degrees. I graduated with a double major in Botany and Education. Showing an interest and performing well in science, my parents' dream was for me to become a physician. Notice that I refer to the profession as "physicians" and not "doctors" since those of us with the letters Ph.D. after our names are the "doctors".

During one science class in high school where we dissected frogs, I realized that I did not want and could not be a physician, specifically a surgeon, which is what I had told my parents I would be. The reasons were two fold: I did not have the patience for the detailed microsurgery that would be involved and neither could I stand for long periods of time during surgery. Of course, I beg to differ with myself on these issues since my current research requires that I do microsurgery on mouse embryos and it does take a long time. However, I can sit while performing the delicate surgery. I knew I would stay in science because I loved it and also I was strongly encouraged by my science teacher who thought there was no question about whether I should major in science or the humanities. Upon informing my parents about my epiphany, it was mind shattering especially for my father, who would not speak to me for a couple of days. After I got my mother to calm him down, I told him that I was not leaving the field of science and promised him that I would become a doctor. Of course at that time, I really did not know what other form of doctor there was except being a physician. Here I am today as I doctor and my father only addresses me as "Dr. Mrs. Wubah, but I have skipped ahead several years.

After graduation I moved to the United States, specifically The University of Akron, Ohio, where I obtained my Masters in Biology, with a concentration in Phycology. While finishing up my thesis I worked for a year as an electron microscopy technician at Case Western University in Cleveland using the skills I had acquired in a graduate class. This opportunity opened up for me because a former student of my graduate mentor had heard about a position requiring a technician in this field. He told my future employer that he knew someone who could fill that position as well as informing my advisor about this opportunity. This job could not have come at a better time, because I had technically completed my course work but needed to finish writing my thesis and needed a job while undertaking this part of my degree.

I worked for several more years before deciding to go back to graduate school to obtain my Ph.D. When I started researching schools, it became apparent that the cutting edge of science was molecular biology, which was at its relative infancy. Because my undergraduate and Master's degrees were in the field of Botany, I knew that I would not be competitive (although I was a straight A student) in a program that involved molecular biology because it was not considered as a tool as we do today. I decided to get a second Master's in Molecular Biology which would put me in better stance when it came to applying

to a Ph.D. program. I did not know which specific field I was going to pursue for my doctorate but I just knew that it would be outside Botany.

I applied to the Master's program at Thomas Jefferson University in Philadelphia. I was called for an interview only to be told that they had filled up all the positions for that year. But the interviewer suggested that I talk to the Director of the Graduate Admissions because she had better knowledge of other programs at Jefferson with openings available. This lady's (Jesse is her name) first question to me was that did I know that I already had a graduate degree. I responded in the affirmative but continued that my field of specialization would not make me competitive for entry into a Ph.D. program. She informed me that the Developmental Biology/Teratology program had openings. Indeed there was but because of technicalities I could not start that year of 1993. Jesse kept my application open and was the one who contacted me the following year to find out if I was still interested in the Teratology program. Because of that opportunity, I have a Ph.D. in Teratology, the study of birth defects. Within this time, I started my family which is one of the challenges facing women in science. I had a very supportive family, specifically my husband and mother. My mother came from Ghana to take care of my daughter 3 weeks after she was born till she was one. My husband drove me every weekend from Baltimore to Philadelphia for 3 out of the 4 years that I did my studies. Not everyone can be that fortunate but support for graduate studies is crucial.

If anyone had told me that I would end up with a terminal degree in the field of the study of abnormal development, after studying seaweeds for my baccalaureate and master's degree, my answer would have been no. But that is why I can not stress it enough; take any opportunity that comes your way because you never know where it may lead you. I am living proof of that.

A major in Biology is more than a single scientific area of study. We all know of the numerous concentrations that exist within this field. In addition, attention to detail, math skills, and critical thinking associated with the discipline comes into play when you least expect. Many of us think of the first job that one can attain with the Biology degree is being a laboratory technician. Although this fact may be true for some people, it is becoming more and more evident that with changing times, this is not the case. Below is a list compiled by James Madison University's Academic Advising and Career Development Office showing various career paths chosen by Biology graduates. I have modified the list to highlight those professions that deviate from the typical career paths associated with the major.

- Air pollution analyst
- Aquarium technician
- Blood bank specialist
- Conservation program aid
- Environmental lawyer
- Environmental Protection Agency inspector
- Ethicist
- Hospital administrator
- Medical illustrator
- Park ranger



- Technical marketing specialist
- Technical writer

This list is by no means comprehensive and bear in mind that some fields require graduate study or further training beyond the baccalaureate. My last piece of advice is to follow your passion. The old cliché that “there is nothing greater than doing something you love and being paid for it” is true. It can happen with a biology degree. Remember to be open to opportunities. Thank you.



**Dr. Robert A. Washington-Allen** is a Research Assistant Professor with the Center for Regional and Environmental Studies in the Department of Environmental Sciences of the University of Virginia in Charlottesville, VA. He can be reached by email at: [washingtonra@mac.com](mailto:washingtonra@mac.com).

I will present a short autobiography which will provide three main points 1) the influences on my career track, 2) choose a career track that is a passion for you, and 3) graduate school in the biological or environmental sciences should be relatively cost-free to you.

I received my BS degree in Zoology from The Ohio State University. I wanted to be a scientist at least from 9 years of age because my primary influence was my love of science fiction and comic books, the latter of which I still collect today. My favorite characters were Bruce Wayne who was The Batman, Henry Pym who was Giant-man, Ant-man, and Yellow Jacket, and Reed Richards who was Mr. Fantastic of the Fantastic Four and a certifiable genius. Batman was known as “The Detective” and he was very smart, very logical, and very able at inventing devices and using them to solve crimes. Dr. Pym was an entomologist and a biochemist/physicist who discovered the “Pym particles” that allowed him to grow to Giant size or shrink to ant size. Also his research in cybernetics (control systems) allowed him to communicate with ants. Reed Richards was a physicist and an explorer of inner and outer space whose skills led him to have many patents and led to the inception of the Fantastic Four. A lot of these things were pure fantasy, but speculative fiction can lead the way to discoveries. For example, Robert A. Heinlein conceived the idea of both Waldos (robotic arms) and the waterbed before either was ever invented and then there are Jules Verne’s stories.

At OSU, I was a biology major, but discovered that OSU’s biology program was really a pre-med program and because of the large student body a factory-line that was not personally oriented towards the development of interested biologists. Also my interest originally tended towards marine biology, but after seeing the movie *Jaws* during high school I abruptly changed my mind about that career and went into Zoology. Funny enough I became interested in Ethology (Animal behavior) and wanted to study grizzly bears –trading an ocean predator for a terrestrial. My undergraduate advisor at OSU was the late Professor Walter Rothenbuhler who is considered the father of Behavioral Genetics. Dr. Rothenbuhler was the first Professor I had at OSU who honestly cared about his students and who had a great desire to teach. I was a student-athlete at OSU running both Cross Country and Track & Field. I ran the steeplechase and set a school record that has since been broken. For my first few years at OSU I was



really an athlete-student, losing sight of the fact that I was there to learn a profession. Dr. Rothenbuhler, among others got me back on the right track after I spent a year academically ineligible. He asked me what my career goals, likes, and dislikes were and advised me on what I would need to do to make myself attractive to graduate schools in the sciences. One of the things he advised I do was gain public speaking experience. I pursued this upon graduation by becoming a U.S. Peace Corps volunteer (PCV). I went to Lesotho (Lay-soo-too), southern Africa. Lesotho is completely surrounded by the Republic of South Africa and I was there during the Apartheid era.

My PCV assignment concerned teaching math and science (Basic, Physics, Biology, and Chemistry) to high school students. PC provided my cohort with 8 weeks of education training that included: teaching English as a second language, government education organization structure and philosophy, syllabus design and organization, test design and organization, classroom design and organization, teaching experience, science instruments design and construction, and teaching methods. PCVs get great academic benefits from our 2-year service. We are extremely attractive to a number of graduate schools because our experience tends to train us to be independent and tremendous self-starters (Type-A personalities), characteristics that Major Professors love. I was in Lesotho for 6 years because after 3 years in PC I went to work for the United States Agency for International Development (USAID) as a subcontractor teaching at the Lesotho Agricultural College (LAC). At the Lesotho Agricultural College (LAC) my tasks included development of curricula for the agricultural extension course. At LAC, our mission was to train our graduates to be agricultural extension workers. I found that the extension courses curricula had too great an emphasis on theory and lacked aspects of practical field training necessary for our graduates to perform their duties. Consequently, I redesigned the course to reflect the purpose of the institute and the needs of agriculture in Lesotho. I also developed the library, laboratory and field science facilities successfully funding these projects through internal grants.

I came to teach at the college because I had read Aldo Leopold's *Sand County Almanac* and there is a section of the book where he explains that courses labeled ecology were not the only place that you could learn ecology, but also in agronomy or other agricultural science classes. So when I heard that LAC taught ecology, I went over to see how this was done and got firsthand experience by teaching the course.

My experience at LAC solidified my career track. I interacted with natural resources from the perspective of management, research, teaching, and technology transfer (extension). This is the type of career I wanted to continue so I went to Utah State University to get my MS in Rangeland Ecology. I visited a number of graduate programs that had accepted me, including the University of Wisconsin and Cornell, and learned that you shouldn't have to pay for graduate school particularly at research-oriented Universities. You find a major Professor whose interests mirror your own and he/she will support you to further their research agenda. Secondly, if you have been accepted in a number of programs, you become a commodity that sophisticated programs will compete for and this increases your chances for fellowships and other sources of internal financial aide.

My MS research concerned the effects of drought on subsistence agro pastoral communities on the Bolivian Altiplano. I used time series of satellite imagery to identify grazing resources that were resilient during extreme drought events. As a part of my training, I worked for the Office of Navajo and Hopi Indian Relocation (ONHIR) in Flagstaff, Arizona as a range conservationist. I conducted oral surveys for ONHIR looking at the cultural reasons for raising sheep and reconstructed the Clan genealogy. I started my PhD in Ecology at Utah State, but was simultaneously offered a remote sensing and GIS research position with the Department of Energy's Oak Ridge National Laboratory (ORNL) in Oak Ridge, Tennessee. I had learned about ORNL from Dr. Monica Turner, one of the leading landscape ecologists in the country, who was a guest lecturer at USU. I learned from her that my research fell within the realm of landscape ecology. Take advantage of visiting speakers, if only to network and develop future collaborators and friends. ORNL was looking for a landscape ecologist with RS and GIS skills and I fit the bill perfectly. However, I told them I had started a PhD program and they then informed me during negotiations that they would pay for my pursuit of this degree. It took a while working a full-time job and trying to complete a PhD but I succeeded and I am now pursuing an academic career after working at ORNL for nearly 10 years. However, my dissertation research was funded by a Science-to-Achieve Results (STAR) grant I received from the Environmental Protection Agency. My research concerned the development of techniques for using time series of satellite imagery to assess the ecological sustainability of rangelands.

The late Robert Peters commented in his book *A Critique for Ecology*, that ecology is the science of the environment, and that the purpose of ecology is to solve environmental problems by application of ecological principles. I share Dr. Peters' viewpoint with the hope that I have been doing and would like to do research that betters not only the human condition but contributes to sustainability of the earth's resources. I have been trained in aspects of physical geography, biology, ecology including landscape ecology, and statistics with the attendant field and laboratory courses concerning the inventory and survey of plant, soil, and land form attributes at different spatial and temporal scales. My research and work experience has primarily focused on applied ecology, natural resource management, and rural sociology in regards to farming systems research, environmental monitoring, and related topics under the general rubric of sustainable development. The research topics I am interested in include biogeography, landscape ecology and ecotoxicology; biogeochemical cycling; development of ecological indicators; ecological risk assessment; ecological resilience in the tradition of C.S. Holling and the late Walter Westman, with a particular focus on thresholds; plant-herbivore dynamics from the perspective of I. Noy-Meir and C. Loehle and their relation to landscape structure and configuration; vegetation dynamics, particularly states-and-transition models (multiple stable states) and dynamical systems analysis; wildlife and livestock relations; and the relationship of concepts which now come under the rubric of biological complexity including general systems, chaos, complexity, catastrophe, and hierarchy theories. I am interested in how these theories may relate to middle number and self-organizing system concepts. I am mostly interested in how these concepts are linked to management of natural resources. My research has been primarily empirical studies in southeastern oak-hickory and long-leaf



pine forests, the Great Basin, Chihuahuan, Colorado Plateau, and Mojave deserts, the high plains grasslands of the Bolivian Altiplano and Lesotho, the savanna ecosystems of South Africa, Zambia, and Botswana, the mangrove ecosystems of Mozambique, and tall grass prairie ecosystems in Kansas and Oklahoma. The research tools I have employed include fieldwork, laboratory studies, computer programming, spreadsheets, a host of geomatic tools including, field, airborne, and, satellite remote sensing, Geographic Information Systems (GIS), global positioning systems (GPS), photogrammetry, and cartography, and analytical and statistical modeling.



The workshop "Identifying Careers in Biology" was organized by the ASB Committee for Human Diversity. Lunch, much appreciated by participants, was sponsored by UT-Battelle (managing contractor for Oak Ridge National Laboratory) and Carolina Biological Supply Company for providing lunch.



Workshop speakers from left to right Judith Wubah, Barbara Kreutzer, Robert Washington-Allen, and Gillian Bowser.



## THE PEMBROKE GROUP AT GATLINBURG, TENNESSEE

Pictured are faculty and undergraduate students of the Department of Biology, University of North Carolina, Pembroke, who attended the 67<sup>th</sup> Annual Meeting of the Association of Southeastern Biologists in Gatlinburg, Tennessee.



Pictured in the photograph on the back row (from left to right) are Bill Hickman, Demetrius Locklear, Christy Parker, Jacob Davis, Bryan Sealey, \*Andy Ash, and \*Bruce Ezell. Pictured on the front row (from left to right) are \*Lisa Kelly, \*Bonnie Kelley, Allison McRae, Brad Wright, Courtney Kilgore, Sarah Brown, Hannah Sprinkle, Kristen Vaughan, \*Debby Hanmer, and \*Leon Jernigan. The asterisks indicate members of the faculty; the other people are undergraduate students.

## **RESOLUTION OF APPRECIATION TO THE UNIVERSITY OF TENNESSEE**

**WHEREAS**, the University of Tennessee at Knoxville did agree to make all local arrangements for the Association of Southeastern Biologists to hold its annual meeting on 29 March through 1 April, 2006 in Gatlinburg, Tennessee; and

**WHEREAS**, Local Arrangements Co-chairs Drs. Patricia Cox of the Tennessee Valley Authority and Randall Small of the University of Tennessee, Program Chairs Drs. Joseph H. Williams, Karen Hughes, Charles Faulkner and Jake Weltzin of the University of Tennessee did an admirable job of orchestrating the events and organizing the paper and poster session; and

**WHEREAS**, Drs. Joseph Williams and Karen Hughes organized posters and Chuck Cooper and Charles Wilder coordinated audiovisuals, Mr. Scott Jewell coordinated commercial exhibits and workshops, and corporate sponsorships, Drs. Ken McFarland and Edward Clebsch planned field trips, Leeds Corporation handled registration and meeting statistics, Drs. Patricia B. Cox, Randall Small and Mr. Scott Jewell made social arrangements, Dr. Edward Lickey coordinated Beta Beta Beta, Dr. Patricia Cox coordinated symposia, Dr. Terry Richardson managed the web page, Dr. Jim Caponetti coordinated volunteers, Ms. Eunice Turner provided secretarial assistance for both the journal and program schedule, Dr. Chris Boake of the Department of Ecology and Evolutionary biology provided monetary assistance for publishing the program schedule, and Dr. John Koontz, director of the Division of Biology assisted with funding for the Wednesday night social; and

**WHEREAS**, the citizenry of Gatlinburg, Tennessee, the administrators at the University of Tennessee at Knoxville and the Great Smoky Mountains National Park, cooperated to welcome ASB to the city of Gatlinburg, Tennessee; and

**WHEREAS**, the students of the University of Tennessee at Knoxville volunteered to assist with local arrangements; therefore, be it

**RESOLVED**, that the members and officers of the Association of Southeastern Biologists give their sincere thanks and appreciation to all involved in making this the excellent and memorable ASB meeting that resulted from the cumulative efforts of these individuals and organizations.

29 March 2006

**A Resolution on Invasive Species  
to the Conservation Committee and the Resolution Committee  
Association of Southeastern Biologists March 2006**

The Resolutions Committee has recommended the following position statement, crafted by the Conservation Committee, be submitted to the ASB membership for their consideration at the 67<sup>th</sup> annual meeting in Gatlinburg, Tennessee.

Respectfully submitted,

Claudia L. Jolls

Past President and chair of the Resolutions Committee

**DRAFT RESOLUTION**

The Association of Southeastern Biologists (ASB) is a regional, professional society of biologists. The purpose of this Association is to promote the advancement of biology as a science by encouraging research, the imparting of knowledge, the application of knowledge to the solution of biological problems and the preservation of biology resources. This statement expresses the recommendations of the Association concerning

**RESOLUTION TO APPROVE A STATEMENT CONCERNING SUPPORT FOR  
KNOWLEDGE AND CONTROL OF NON-NATIVE INVASIVE SPECIES**

**WHEREAS**, virtually all natural habitats are imperiled by invasion of non-native organisms,

**WHEREAS**, the number of both non-native and native invasive taxa and their impacts are increasing; and

**WHEREAS**, non-native invasive organisms have profound, detrimental impacts on the environment and on human economies; and

**WHEREAS**, as scientists in the Southeastern United States, we are concerned that our terrestrial and aquatic ecosystems are threatened and limits to our knowledge impair our ability to manage these threats; therefore be it

**RESOLVED**, That the membership of the Association of Southeastern Biologists adopts the position set forth herein as the official position of the Association on these matters; and be it further

**RESOLVED**, That this position statement shall be sent to the appropriate agencies and organizations of several states in which we are well-represented as well as any appropriate officials when the need arises, as approved by the Executive Committee of the Association.



## **Statement of the Position of the Association of Southeastern Biologists Regarding Invasive Species**

**Revised March 2006**

The Association of Southeastern Biologists identifies the need and supports actions (at federal, state, regional, and local levels) to address critical, non-native invasive species issues. The issue of invasive exotic species is of great concern to all facets of society as the costs, both in dollars and ecological damage, are increasing.

The infestation of invasive non-native plants, animals, and microorganisms is a long-standing and growing problem in the United States. There are approximately 50,000 foreign species and the number is increasing. The spread of invasives is described by the U.S. Government Accountability Office as "an explosion in slow motion." Some estimate that 42% of the species on the Threatened or Endangered species lists are at risk primarily because of non-native plant species.

Invasive non-native species have caused major economic losses in agriculture, forestry, ranching, fisheries, and several other segments of the U.S. economy, in addition to harming the environment and impacting the frequency of wildfires. The federal government has a substantial stake in the battle against invasive species. Numerous federal agencies spend over a billion dollars annually to prevent, detect, control, or otherwise manage invasive species. The environmental and economic costs associated with invasive species in the U.S. are estimated to be more than \$120 billion annually.

Numerous ecological processes may allow non-native invasive species to become abundant and persistent. These include the lack of controlling natural enemies (e.g., purple loosestrife and imported fire ant); the development of new associations between non-native parasite and host (e.g., gypsy moth in oaks); the establishment of effective non-native predators in new ecosystems (e.g., brown tree snake and feral cats), the creation of artificial and/or disturbed habitats that provide favorable ecosystems for invasion by these taxa (e.g., in crop and lawn habitats); and invasion by some highly adaptable and successful non-native species (e.g., water hyacinth and zebra mussel). There continues to be a lack of knowledge on impacts of both recognized and unrecognized high-impact invaders.

The Association of Southeastern Biologists advocates guidelines set forth by the Species Survival Commission Invasive Species Specialist Group of The International Union for Conservation of Nature and Natural Resources (IUCN) to "strengthening the management response, providing appropriate legal and institutional mechanisms, and enhancing knowledge and research efforts". (<http://www.iucn.org/themes/ssc/pubs/policy/invasivesEng.htm>).

The National Environmental Coalition on Invasive Species (NECIS), <http://resourcescommittee.house.gov/108cong/fish/2003apr29/windle.htm>, states the guidelines as:

**“prevention** to keep out invasives from the US and their establishment

**early detection and rapid response** to monitor, detect and rapidly respond while eradication is still possible, improving understanding and awareness

**control and management** to coordinate ongoing efforts with local, state, regional, federal, and international authorities to minimize impacts of existing invasions and prevent their spread

**public outreach and education** to alert the public of this serious threat and inform so individual actions can limit the introduction or spread of harmful, non-native species

**research and monitoring** to invest in effective and environmentally sound control technologies and other tools, and in the biologists and biological research needed to ensure long-term success.”

The Association of Southeastern Biologists further supports directives to reduce introduction of damaging invasives with better screening, control and exclusion of organisms known to be threats, including inadvertent introduction through major pathways, including ships; packaging, and imported live plants, animals and their products. The Society also encourages and supports stronger **regulations to prevent the import and export of non-native invasive species via trade not only in the United States, but the broader international community.**

Scientists, educators and government officials are called upon to increase public awareness of this increasing problem with the goal of generating on-the-ground policy. In addition, increased funding, funding focus, scientific dialogues and public forums are needed for education, prevention, early detection and rapid response, control, monitoring, and research on invasive species.

**OMITTED ABSTRACT**

*This abstract was inadvertently omitted from the April, 2006, abstract issue listing.*

**POSTER PRESENTATION**

JIANG, CHEN<sup>1</sup>, GLENN M. COHEN<sup>1</sup>, AND ERIC G. SPOKAS<sup>2</sup>. Troy University<sup>1</sup> and Rowan University<sup>2</sup>—Alkaline and acid phosphatase activities in mosquitofish gills after freshwater and seawater adaptation.

To demonstrate the expression of acid (ACP) and alkaline (ALP) phosphatase activities in mosquitofish gills under ionic stress, mosquitofish were divided into groups I-IV: group I was adapted from freshwater (FW) to 50% seawater (SW); group II was adapted from 50% SW to FW; group III was adapted to 50% SW, and group IV was adapted to FW. Groups I and II served as experimental, whereas groups III and IV served as controls. All fish were sacrificed 0, 3, 6 and 12 hrs after the transfers. For enzyme histochemistry, naphthol AS-MX phosphate-stabilized diazonium salts were used to demonstrate the distribution and staining intensities of the two enzymes. In present study, ACP stained most gill cell types; chloride cells stained especially strongly. However, ACP staining intensities remained the same during ionic stress. ALP stained only pillar cells and gill vascular elements. Ionic stress did not affect ALP staining intensities. Cellulose acetate gel electrophoresis was used to determine the number of ALP and ACP isoforms. Our experiments showed that three ALP isoforms and two ACP isoforms are normally present in mosquitofish gills. L-tetramisole inhibited one ALP isoform, but did not inhibit the other two ALP isoforms. One ACP isoform was sensitive to sodium tartrate whereas the other was insensitive to sodium tartrate. However, both ACP isoforms were inhibited by cupric sulfate. Neither ALP nor ACP formed new isoform patterns under ionic stress. In conclusion, ionic stress did not influence either enzyme activities (as expressed by staining intensities) or the number of enzyme isoforms.

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Past Presidents of ASB at the Friday night banquet. From left to right: William Martin, John Herr, Claudia Jolls, and Dwayne Wise.



**ASSOCIATION OF SOUTHEASTERN BIOLOGISTS 2006  
TREASURER'S REPORT FY 1 JANUARY-31 DECEMBER 2005**

<b>I. BEGINNING BALANCE</b>		<b>\$ 71,707</b>
<b>II. RECEIPTS</b>		
Non-Patron Dues	16,550	
Patron Dues	3,750	
Meeting Revenue, 2005 Florence	19,329	
Meeting Revenue, 2006 Gatlinburg	581	
Exhibits 2005	5,224	
Exhibits 2006	3,225	
ASB Enrichment Fund Contributions	2,280	
Interest 107		
Carolina Biological Sup. Meritorious Teaching Award	1,500	
Martin Microscope Student Research Award	1,000	
TL-Brooks/Cole Student Aquatic Biology Award	200	
Royalties 67		
<b>TOTAL RECEIPTS</b>		<b>\$ 53,813</b>
<b>III. TOTAL RECEIPTS AND BEGINNING BALANCE</b>		<b>\$125,520</b>
<b>IV. DISBURSEMENTS</b>		
<b>1 Publications</b>		
SE Biology 52(1)	(2,117)	
SE Biology 52(2)	(6,546)	
SE Biology 52(3)	(4,186)	
SE Biology 52(4)	(3,684)	
<b>Publications Total</b>		<b>(16,533)</b>
<b>2 Office Expenses</b>		<b>(1,215)</b>
<b>3 Official Travel</b>		<b>--</b>
<b>4 Awards and Honoraria</b>		
Graduate Student Support Grants	(3,370)	
Speaker Honorarium	(1,000)	
Speaker Travel	(434)	
Brooks/Cole Student Aquatic Biology Award	(200)	
Martin Microscope Student Research Award	(1,000)	
ASB Senior Research Award	(1,000)	
Certificates/Plaques	(396)	
ASB Student Poster Award 2004	(300)	
ASB Student Poster Award 2005	(300)	
ASB Outstanding Biology Teacher	(500)	
Carolina Bio Meritorious Teaching Award	(1,500)	
<b>Total Awards</b>		<b>(10,000)</b>
<b>5 Interim Meeting</b>		<b>(272)</b>
<b>6 Affiliations</b>		<b>(125)</b>
<b>7 Local Committees</b> 2005	(33,302)	
2006	(7,000)	
<b>Local Committees Total</b>		<b>(40,302)</b>
<b>8 Symposia, Workshops</b>		<b>(1,000)</b>
<b>9 Bank Charges</b>		<b>(132)</b>
<b>10 Liability Insurance</b>		<b>(670)</b>
<b>11 A2Z Convention Services</b>		<b>(12,000)</b>
<b>TOTAL DISBURSEMENTS</b>		<b>(\$ 82,249)</b>
<b>V. ENDING BALANCE</b>		<b>\$ 43,271</b>
<b>VI. NET CHANGE</b>		<b>(\$ 28,436)</b>

**ASB ENRICHMENT FUND**  
**1 JANUARY – 31 DECEMBER 2005**

<b>I. BEGINNING BALANCE</b>		<b>\$40,923</b>
<b>II. RECEIPTS</b>		
1. Contributions	2,280	
2. Interest	107	
<b>TOTAL RECEIPTS</b>		<b>\$2,387</b>
<b>III. TOTAL RECEIPTS AND BEGINNING BALANCE</b>		<b>\$43,310</b>
<b>IV. TOTAL DISBURSEMENTS (OBT)</b>		<b>\$ 500</b>
<b>V. ENDING BALANCE</b>		<b>\$42,810</b>
<b>VI. NET INCREASE</b>		<b>\$ 1,887</b>

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**ASSOCIATION OF SOUTHEASTERN BIOLOGISTS**

**MEMBERSHIP OFFICER'S REPORT**

**2006 ASB DECEASED MEMBERS**

William Burbank	William Mengebier
Neil Grant	Albert Radford
Robert Martin	

**2006 ASB EMERITUS STATUS REQUESTS**

Jon R Fortman	Ken McLeod
Eugene P Keferl	Richard F Modlin
Marian L Lewis	James B Sickel

<b>CURRENT MEMBERSHIP</b>	<b>April 2005</b>	<b>March 2006</b>
Complimentary	20	20
Contributing	11	11
Emeritus	65	73
Family	33	32
Library	56	56
Life	11	25
Patron	7	7
(Life & Patron	2	2)
Regular	787	892
Student	308	517
Sustaining	4	2
<b>TOTAL</b>	<b>1,303</b>	<b>1,635</b>

Respectfully submitted,  
Deborah K. Atkinson, ASB Membership Officer

## ASSOCIATION OF SOUTHEASTERN BIOLOGISTS

### ENRICHMENT FUND CONTRIBUTORS 2005

Adams, Jennifer P.  
 Anderson, Gilbert E.  
 Baker, Gail S.  
 Beaird, Janis  
 Bowen, William R.  
 Brown, Christopher  
 Brown, Rebecca L.  
 Burks, Kathy Craddock  
 Chandler, Clay M.  
 Cohen, Glenn M.  
 Dimock, Ronald V., Jr.  
 Douglas, Ruth

Drapalik, Donald J.  
 Fantz, Paul R.  
 Franklin, Beryl C.  
 Greco, Tony  
 Gregg, Katharine B.  
 Griffith, Adam  
 Harrison, Julian R.  
 Herr, John M & Lucrecia  
 Jolls, Claudia L.  
 Kelly, Lisa  
 Maki, Jon R.  
 McDougal, Karen M.

McLetchie, Nicholas  
 O'Kelley, J. Charles  
 Pollard, A. Joseph  
 Porcher, Richard D.  
 Ramseur, George S.  
 Schmalzer, Paul A.  
 Schutte, Alice S.  
 Walker, Joan  
 Wentworth, Thomas R.  
 Williams, James D.

✂



ASB Executive Committee members at the Friday night banquet. From left to right: Jim Caponetti, Don Roush, Dennis Haney, Tim Atkinson, Bonnie Kelley, Wayne Van Devender, Debbie Moore, Kim Marie Tolson, Dwayne Wise, Michael Dennis, John Herr, and Tom Wentworth.



## **ASB PLENARY SESSION ADDRESS**

### **Looking for Linnaea: biological diversity and the ATBI in Great Smoky Mountains National Park**

**Peter White**

Department of Biology and North Carolina Botanical Garden  
The University of North Carolina at Chapel Hill

We meet on the edge of Great Smoky Mountains National Park, the site of the All Taxa Biodiversity Inventory (ATBI). In this talk, I reflect on the history of the park, the biodiversity of the Southeast, and the nation's largest biological inventory project.

#### **Reflections on Great Smoky Mountains National Park**

In the archives of the national park, I came across a pamphlet, printed in 1926, with the simple and modern message "Save Our Mountains". What did the mountains need to be saved from? Large logging companies had moved south by the early 1900s. This was unsustainable logging writ large: whole watersheds cut, logging slash fires, and severe soil erosion.

There were conservation responses to exploitive logging. "Scientific forestry", imported by the Biltmore Estate from Germany, sought to find ways to harvest forests without permanently affecting productivity. The first forestry school was founded in Brevard, North Carolina, in 1898. A second conservation response was preservation. Based on the campaign expressed by the pamphlet "Save Our Mountains", congress passed an act authorizing the creation of a national park in 1926.

Scientists also responded. Examples are the formation of the Southern Appalachian Botanical Club in 1925, the founding of the Highlands Biological Station in 1927, and the creation of the Association of Southeastern Biologists in 1937. ASB's statement of purpose carried among its three goals, the "preservation of biological resources".

The national parks in the west were created from publicly owned land, but the southern Appalachians were in private ownership. The act authorizing Great Smoky Mountains National Park specified that the states of North Carolina and Tennessee were to buy the land from current owners. So a race between logging and conservation was underway. In 1934, sufficient land had been acquired and the congress officially created Great Smoky Mountains National Park. At that time, about 25 percent of the park had never been directly disturbed—and on that land are some of the East's largest trees and biggest blocks of old-growth forest.

Preservation had been successful, but our jobs as scientists and conservationists will never be done. Air pollution, climate change, and invasive species were not excluded by park boundaries. The park had already lost large predators like the mountain lion and wolf, and other animals such as the elk (now reintroduced), beaver (recolonizing on its own), and passenger pigeon. Fire frequency has decreased—and some fire-dependent habitats are being lost

through succession. Direct taking would seem to be a thing of the past—but ginseng, black bears, and other species are illegally poached in the park. Habitat loss and fragmentation would also seem to be a problem of the past—but projects such as the North Shore Road remind us that we need to be vigilant even now.

Although the “biological diversity” (1980) and “biodiversity” (1985) are new terms, it has rapidly become our new rallying cry. We may not be able to guarantee nature free of human influence, but the response of ecosystems depends on biological variety, and so a new focus is the conservation of biological diversity itself.

### **Linnaea and the meeting grounds of biodiversity**

One of the first floras I ever opened was the Flora of Berkshire County, Massachusetts. I was delighted to learn in the introduction that I was lucky to be in Berkshire County because it was the meeting ground of a Northern and a Southern flora, an Eastern and a Western flora. My professional journey took me next to Missouri, where, soon after my arrival, I also learned that I was lucky to be in Missouri, for it was the meeting ground, too! I moved next to Tennessee—where when Paul Somers of the Natural Heritage Program told me that I was lucky to be in Tennessee, for it was a meeting ground. When I moved to North Carolina, of course, I discovered another meeting ground. Not much comes from the East, but we have the most southern locations of the Greenland sandwort and the most northern locations of palms and even a species of epiphytic orchid, plant types more subtropical or tropical than temperate.

I don’t mean to belittle these claims. I think every place is a meeting ground and that life is spread out around us like an ever changing tapestry, making each place a meeting ground and each place unique and each deserving of celebration.

This is where *Linnaea borealis* comes in. This northern species is circumpolar and was so loved by Linnaeus in Sweden that he had it named for himself. Linnaeus the father of taxonomy and the popularizer of the binomial as a convenient system of reference. At the University of Tennessee Herbarium is the only collection of this plant from our area: Albert Ruth, August 12, 1892, “in mountain woods”, Sevier County, Tennessee. *Linnaea* has a romantic association with Linnaeus himself—and this is the only location south of West Virginia.

Eventually Ruth moved to Texas and his collection of *Linnaea* went with him. The specimen may never have come to light except for a disaster back in Knoxville: the University of Tennessee Herbarium was lost in a fire that consumed Morrill Hall (today’s threats to biological collections are often more subtle: lack of administrative support!). Tennessee botanists of all ranks worked to rebuild the collection through field work and through writing letters to people who might have specimens from the state. One of those people was Albert Ruth’s daughter in Texas (Ruth had died two years earlier) who returned a box of her father’s Tennessee specimens.



## **The Southeast's distinctive biodiversity signature**

As a northern plant, *Linnaea* is part of the meeting ground of the Smokies. It hasn't been seen since 1892 and therefore also represents the intriguing hunt for rarities. But the story of biodiversity in the Southeast also goes beyond meeting grounds: our area has remarkably high numbers of localized endemics that come from nowhere else.

My own scientific route tells this story, too. As one moves south from New England to North Carolina, the diversity of vascular plants increases—some 30 percent in this span of latitudes. But the numbers of narrow endemics increases much more steeply than the overall number of species. The narrow endemics of the Southeast include plants, amphibians, reptiles, turtles, fish, mussels, crayfish, and snails. I have computed that for a variety of terrestrial and aquatic groups, the gradient in narrow endemics is 5-75 times steeper than the gradient in total richness. This increase is most associated with the boundary of the last glacial advance and probably results from the evolutionary age of the Southeast, assisted by climate change without the greater changes of glaciation.

## **The ATBI: an overview**

Given the conservation challenges of the day, biodiversity has become an equal cause to wilderness itself. Our lack of knowledge, beyond the best studied groups, is clear. Some of the less well known groups harbor species that play critical ecological roles, such as soil fungi, bacteria, and pollinating insects. The statistics of extrapolating from small samples to larger areas has proved difficult. Thus, we often can't predict the total diversity, not only for the globe but also for Great Smoky Mountains National Park itself.

Given our lack of knowledge and the conservation importance of biodiversity, the All Taxa Biodiversity Inventory was launched in 1997. Inspired by a project in Costa Rica, the ATBI had indispensable leadership from Keith Langdon, the park's head of inventory and monitoring. We organized a non-profit, Discover Life in America (DLIA), to oversee the development of the project. The project quickly captured the imagination of folks in many walks of life. We are now educators, professional scientists, citizen scientists, volunteers, conservationists, and even artists.

The field work is represented by intensive bioquests (24 hr to 2 week intensive efforts by teams of scientists and volunteers), several-year graduate student projects, and sustained multi-year projects. DLIA has been able to award small grants—and scientists and graduate students find matching money and services for their work. Several of our scientists have used our small grants to land large NSF grants, including work on fungi, algae, myxomycetes, beetles, and explorations of tree canopies. We are using both traditional methods (taxonomists exploring the places that seem best to them) and structured methods (biodiversity reference plots chosen to represent the factors that control species distributions). We are using digital maps and data to analyze park environments and to model species distributions (these may even help us predict the most likely spots for the rediscovery of *Linnaea*!). Some 200 people are involved, with many states and several foreign countries represented in the list of investigators. The ASB Meeting includes a full day symposium on the ATBI,



organized by Pat Cox of TVA, which presents a much fuller picture of this project (by my count 26 institutions and 17 states contributed to this symposium).

The species scorecard is astounding: so far 612 species new to science and 5,000 species never before reported from Great Smoky Mountains National Park. There is so much life teeming around us and we know so little about it. The project is not just about the numbers of species, it is also about building maps, discovering life history traits and species interactions, building park databases, and bringing the story of biodiversity to the public. Our investigators are using the new methods, including GPS units to map locations (if only Albert Ruth had access to these, the looking for *Linnaea* would be much easier today) and the DNA Barcode Project that seeks to develop molecular techniques for rapid species identification. Given the huge task, the DNA Barcode Project is particularly attractive in that it will allow us to rapidly estimate the probability that a species is new to science (thus helping us prioritize taxonomic work). The promise of this work is also that it will help us link life stages to the correct species (some aphids have up to 7 distinctive morphologies during their development), identify the diet of insects from samples of their gut, detect the presence of parasites, and confirm species from traces and fragments.

The ATBI is conventional biological exploration, but it is also helping to establish a new model for biological inventory and seeks to create a new connection between biodiversity and the public, including those who know and love Great Smoky Mountains National Park as the great wilderness preserve it represents (discover more at [www.dlia.org](http://www.dlia.org)).

### Final thoughts

I come back to where I started. Just as in the beginning, when scientific societies like ASB took stands against biological destruction, science must also meet this challenge: to continue to document and understand biological diversity, for both ethical (the preservation of living things) and practical (the sustainability of human life) reasons. At the same time, we live in an age when systematics and taxonomy are themselves under threat, as resources devoted to natural history collections have been decreasing. It is my hope that projects like the ATBI will help reverse this trend and that new methods and models of biological diversity survey will rush to fill the breach. Linnaeus started us on a process of biological discovery and communication. In looking for *Linnaea*, we are also extending the purposes and methods of Linnaeus to a new age.

Thursday Evening at the Bandana Bash



Posing are Jon Davenport (left) and Julie Marik of East Carolina University, Greenville, North Carolina.



From left to right: Jon Davenport, Claudia Jolls, and Tracy Rogers of East Carolina University, Greenville, North Carolina.



**ASB PAST PRESIDENT'S BANQUET ADDRESS****Ethics in Science: Cardinal Sins and Heavenly Virtues**

*(Advice from a No-Longer-Young Biologist on Being One,  
with apologies to Sir Peter Medawar and Dr. John Janovy)*

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31 March 2006

It was 1980 and I had just received a doctorate in biology from the University of Colorado. Although trained in the sciences, I realized I did not yet know how to be a scientist. Fortunately, finer minds than mine offered the benefits of their experiences, including 1960 Nobel Laureate Sir Peter Brian Medawar. Six years before his death, the great immunologist gave his perspective on being a scientist, entitled, *Advice to a Young Biologist*. Shortly thereafter, University of Nebraska parasitologist John Janovy, Jr. contributed *On Becoming a Biologist* (thus, my choice of title). Nevertheless, I began my faculty appointment at East Carolina University feeling much as one does as ASB Past President, with enthusiasm and trepidation. As is so typical of our profession, the kindness and experiences of colleagues nearer than Medawar or Janovy have been instrumental in my professional development. My colleague at ECU, Mark Brinson, brought me to my first ASB meeting in 1986 at the University of South Carolina at Columbia (where, by the way, we reunite in 2007). In ASB, a regional organization unmatched in this country, I found a professional, personal and even spiritual home.

In 1994, my dear colleague and former ASB treasurer Gerhard Kalmus cajoled me into involvement with the North Carolina Collegiate Academy of Science Undergraduate Research Workshop. He asked me to speak on ethical issues in science....me, a plant ecologist, who despite the University of Michigan's best aspirations, was not raised in the liberal arts tradition. Ethics: isn't that the realm of philosophy and the humanities? Gerhard was encouraging, but could I learn a new trick? Many of you have seized this subject (e.g., Wentworth and Rosenfeld 2005). Thanks to discussions with many colleagues, notably Gehard, Hal Daniel and James Leroy Smith, I here present what has evolved from early approaches at an ASB education session (Jolls 1995) to how we approach "ethics" with our first year graduate students in an Introduction to Research class.

Science is a way of knowing and ethics has been defined as the "science" of human conduct. Science is something *people do*, thus, our craft, as for all human endeavors, requires adherence to values and moral standards, operative caring for all things and for us as scientists to live our lives above reproach. How do we



navigate our paths through the stormy seas of professional ethics? Perhaps as biologists we might find ethical safe harbor moored in Western philosophy and the Judeo-Christian tradition?

Domenici di Michelino's 1465 fresco *Dante and His Poem* illuminates the wall of the church of Santa Maria del Fiore in Florence. Dante is shown holding a copy of his epic poem, *The Divine Comedy*, and pointing to a procession of sinners being led down to the circles of Hell. Behind Dante are the seven terraces of Purgatory, with sinners atoning for each of the Seven Cardinal Sins. Recall these sins: lust, gluttony, greed/avarice, sloth, wrath, envy and pride. The other side of the coin of human nature and our moral compass is reflected in what Western tradition has named "The Heavenly Virtues". Crafted by Greek philosophers and expanded from The New Testament to include theological values specific to Christians, these virtues are chastity, moderation, generosity, zeal, meekness, charity and humility.

We use this model of seven sins and virtues to illustrate ethical breaches and values in science for discussion with our students. Consider "Seven Deadly Sins in the Sciences", including: plagiarism and lack of collegiality; falsification, fabrication or forgery; "poor" or "soft" science tainted with bias or ignorance; conflicts of interest; failure to predict and think holistically; frailties, including human aims and worldly pursuits; and crimes against society.

We also point out what is valued in science as a process and by scientists as persons and professionals. "Seven Scientific Virtues" should include objectivity, truth and critical judgment; productivity; dedication and tenacity; extensive impact; collaboration and collegiality; visibility; and accountability. These values encompass the quality of science, which is by definition, the determined pursuit of truth, reminiscent of the heavenly virtue "zeal". Our contributions are deemed more worthy and valued more highly if they are highly visible and impact a larger community. Of late, interdisciplinary efforts among scientists are valued. And lastly, our science has implications beyond esoteric pursuits of the ivory tower and knowledge for knowledge's sake. Increasingly, our science is accountable to the public and viewed for its application to the betterment (or not) of the human condition. I often reflect on the personal burden levied on J. Robert Oppenheimer (1904-1967) as director of the Manhattan Project and the resultant devastation at Hiroshima and Nagasaki (Bird and Sherwin 2005).

As junior or senior scientists, we are obliged to adhere to a moral code, often defined by our own personal code and that of our professional societies and institutions we serve. Fortunately, myriad of resources is available to chart our scientific paths, including from our flagship institutions such as the National Academy of Sciences, and even our own umbrella, the American Institute of Biological Sciences; AIBS dedicated their March 2004 annual meeting to the theme of bioethics in a changing world.

To adhere to these standards, we must ask ourselves several questions dealing with the type of science we do and for whom, and how science is done. Do we work with laboratory animals, humans or human embryos? Will we employ our craft to develop technologies such as armaments or biocides? Often, our resource base, including research funds, controls the questions we ask as scientists. This type of moral dilemma has generated discussions, including

those of Stanford chemist, playwright and father of the birth control pill, Carl Djerassi on "chaste" (pure or operating within the confines of academe) vs. "promiscuous" (commingling with industry and business) science. Scientists are asked more and more to make their knowledge available to the people. This accountability extends to making our discoveries not only accessible but understandable to lay people. The face of science is changing and we are compelled to aid the diversification of who does science; is science as a career available to all peoples? Part of our craft demands we collaborate and mentor young scientists; as a result, our relationships may be held up to higher scrutiny than those of other disciplines. Lastly, the way science is done, including the scientific method, allows us the opportunity to demonstrate truth, and our integrity. We are asked to confirm our personal and professional integrity repeatedly, by presenting our work and ourselves for review to peers and the public, accountable to peers, professional societies, funding agencies, and even government and regulatory organizations. Yet, scientists must resist to human frailties; for human aims and worldly pursuits of power and wealth often conflict with a career in science.

Every aspect of the life sciences has the opportunity to teach some of the human aspects of being a scientist and each subdiscipline has its own unique ethical considerations (e.g., use of human subjects, humane treatment of animals, overcollection, environmental consequences of genetically engineered organisms). Let us briefly consider some possibilities.

In the 1920's, University of Vienna scientist Paul Kammerer (1880-1926) performed an experiment allowing land-mating midwife toads (*Aleytes obstetricans*) to mate only in water. After six generations, he claimed that the toads had developed spiny nuptial pads typical of aquatic species, suggesting Lamarckian inheritance of acquired characteristics had taken place. Challenges between Lamarckian and Darwinian views of evolution, then as now, can become acrimonious. G. Kinsley Noble, Curator of Reptiles at the American Museum of Natural History, argued in *Nature* that the nuptial pads of the only remaining specimen were fake, having been created by injecting the frogs with India ink. Kammerer had a history of depression, tragic love entanglements and a ruined career due to losses from WWI; six weeks after Noble's article appeared, Kammerer shot himself. He left a suicide note explaining that he himself did not inject the ink, but that he knew who did, although he did not reveal his/her identity. Arthur Koestler's (1971) *The Case of the Midwife Toad* reviewed the tragedy and wrote a vindication of a man who may have been betrayed, possibly by a Nazi sympathizer.

In the 1940s, John Heslop Harrison (1881-1967) of Newcastle University announced the discovery of several species of rare plants on the Isle of Rùm of the Hebrides off Scotland, hypothesizing some were survivors from a time before the last Ice Age. According to a rather tedious popular account "The Rum Affair" (Sabbagh 2001), John Raven (1914-1980), then a young don at Kings College, reportedly accused Heslop Harrison of transplanting several species of rare plants to the Isle of Rùm. Raven wrote a "damning exposé" that he had sealed in a Cambridge library. Interestingly, the only public account of his investigation was a letter published in *Nature* in 1949 that does not directly implicate Heslop Harrison. One wonders whether this is a tale of fabrication of data and breaches



of ethics, or one of directed hindsight of science and scientists for sensationalized popular viewing.

These sensational ethic issues in the life sciences are not historic; we also present recent accounts. Most recently, a university panel announced that South Korean stem-cell researcher Woo Suk Hwang had fabricated results of obtaining stem cells from cloned human embryos, a huge setback for therapeutic cloning. In 1983, a battle was waged over the discovery of HIV between Luc Montagnier's group of the Pasteur Institute (their "LAV") and Robert Gallo's lab at the National Cancer (their "HTLV-III"). A much publicized international dispute ensued about ownership involving the Office of Scientific Integrity at the National Institutes of Health and eventually President François Mitterrand of France and President Ronald Reagan of the USA. Three years later, the French and US labs finally agreed to share credit for the discovery, newly named, "human immunodeficiency virus" (HIV) (Coffin et al. 1986, Chang et al. 1993). A final modern example may also illustrate the perils of attempted whistle-blowing, whether fact or fiction, for all involved. In 1986, Nobel laureate David Baltimore, then of M.I.T, co-authored a scientific paper in immunology with Thereza Imanishi-Kari (Weaver et al. 1986). Margot O'Toole, a postdoc in the lab, argued the paper contained false statements, was denied access to the data she requested, and in effect accused Imanishi-Kari of data fabrication. Despite his initial refusals, Baltimore and his co-authors eventually retracted the paper, although Imanishi-Kari did not (Weaver et al. 1991). National Institutes of Health and eventually Representative John Dingell of the U.S. Congress were involved. In 1991, NIH's Office of Scientific Integrity accused Imanishi-Kari of falsifying data and recommended censure as denial of funding for 10 years. Amid the controversy, Baltimore resigned from the presidency of Rockefeller University. Imanishi-Kari was vindicated by a new federal review in 1996. One version of the story is described in Daniel Kevles (2000) book, *The Baltimore Case*. Interestingly, mathematician and activist, Serge Lange (1927-2005) later vehemently opposed Yale University's offer of a tenured position to Kevles, in part due to Kevles' book's sympathetic position toward Baltimore. Others support Baltimore's position in support of his junior colleague, Imanishi-Kari. Baltimore has since served as President of Caltech and received the National Medal of Science, Imanishi-Kari received tenure at Tufts University, Kevles went from Caltech to an endowed professorship in history at Yale, and Margot O'Toole lost her postdoctoral appointment but is working in the biotechnology private sector.

I present ethics in biology to graduate students by first illustrating the charts to help orient one's moral compass to reassure young, aspiring professionals that we are not cast adrift in ethical stormy seas. My institution, East Carolina University, like most, has spent considerable effort to detail aspects of professional conduct within their organization, including 1) how we do research and creative activity, 2) ethical issues for students in the classroom, 3) dealing with diversity, and 4) our relationships with other organizations and each other. Such guidelines are drafted as policies and procedures on personal conduct, academic integrity, improper relationships between students and faculty, discrimination, sexual, racial and ethic harassment, and conflicts of interest. I stress to our graduate students, many of whom are teaching assistants, that it is useful to remind all students and faculty alike that we have a code of honor. Is it dishonorable to work collaboratively on assignments? How do we appropriately



use written sources? The new Cyber Age and our ease of rapid access to unfiltered and often unrefereed information via the World Wide Web also pose new perils and potential ethical dilemmas. Most of us, particularly as instructors, have run up against misguided and directed use of information and misinformation as well as blatant acts of plagiarism.

As with all instruction, the disconnect between what we say and what students hear, as well as the hypocrisy between what we say and what we do, can make passive learning about ethics in biology ineffective. We incorporate active learning involving student discussion groups in response to ethical scenarios. As is always the case, finer minds than mine have more eloquently articulated these issues. These scenarios were developed, in part, using two valuable resources by Robin Penslar and Brian Schrag, both affiliated with the Association for Practical and Professional Ethics at Indiana University (Penslar 1995, [www.onlineethics.org](http://www.onlineethics.org)). I attempt to enliven the scenarios by adding some personal anecdotes based on my experience in academe and biology. Here are three brief examples of some of the scenarios.

### SCENARIO 1

"Your university has a policy concerning improper relationships between students and employees. In passing, one of *your undergraduate students* gleefully mentions she is having dinner with one of her professors in your department. What do you do?

- One of *your fellow graduate students* mentions she had a romantic involve/ment with a faculty member on her thesis committee. They have had a falling out and she now fears for the outcome of her defense? What do you do?"

### SCENARIO 2

"In opposition to the University's policy, the director of your research lab has a bottle of "Yee-Ha Licker" in her desk drawer, which you discovered while looking for the phone book. What do you do?"

### SCENARIO 3

"You are a student drafting your thesis work for publication. Your research has been funded, in large part, by a grant awarded to your major professor.

- Do you include your mentor as an author on the manuscript or not? How?
- Your mentor played a major role in design of the project and editorial remarks on your thesis and manuscripts. Do you include him/her on the manuscript? How?

You are now the major professor. You have stressed that the ultimate goal of any research is its publication. Your student produced a stellar thesis, however, repeatedly has shown no interest in its preparation for possible publication.

- Do you submit the thesis? If so, who are authors in what order?"

Finally, although I promised advice in the title, I am no icon of virtue. Nevertheless, I can recommend a focus on education rather than adjudication in

matters of professional mores. Misconduct is more often than not a rash error in judgment rather than malice of forethought. It is important to remind ourselves that we too have made erroneous decisions due to ignorance, immaturity, stress or misconceptions that there were no alternatives. More often than not, knowledge and education are preferable in the long-term to punishment and retribution in the short-term. I hope my offerings here will inspire more of us to bring the personal into the professional in our research and training in biology, and encourage some of us to formalize teaching professional ethics as part of our classroom experience.

In closing, author F. Scott Fitzgerald wrote of writing, "You have to develop a conscience and if on top of that you have talent so much the better. But if you have talent without conscience, you are just one of many thousand journalists." To paraphrase Fitzgerald, as life scientists, talent without conscience would make us nothing at all, or simply one of many tens of thousands technocrats. Writer and environmentalist Ann Linnea reminded us, "It is imperative that universities support their faculties and students when they make decisions based on both passion and logic. Why? Because passion involves both feeling and commitment, and without them there is not hope of solving our own personal problems, let alone the world's. I believe that following passion is a lifelong skill--a magic wand that keeps us awake and able to fashion our own best lives..." Yet, what drives our craft as life scientists is passion; we, too, must make our decisions based on not only ethical considerations and logic, but passion as well.

It has been my privilege to serve as your president, and I have many people to thank, not least of all, the membership and those of you who have graciously, energetically and selflessly served on our Executive and other ASB and affiliate committees. I thank you for the opportunity to serve this wonderful union of biologists, fine professionals and fine people, who have contributed to my own personal and professional development, specifically, your contributions, tolerance and patience, and for teaching this old dog new tricks.

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03



Paul Marek (left) and Amy Stockman of East Carolina University, Greenville, North Carolina, taking a break.



## **MEMORIES OF 2006 ASB–GATLINBURG IN THE VICINITY OF THE GREAT SMOKY MOUNTAINS NATIONAL PARK IN TENNESSEE**

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Tennessee hosted ASB meetings before, most recently in Memphis and also in Chattanooga, but the 2006 67<sup>th</sup> ASB in Gatlinburg was unique for three reasons. (1) Our hosts Dr. Patricia Cox and Dr. Randall Small (University of Tennessee) chose Gatlinburg Convention Center, where our ASB meeting was the first major event since its recent renovation, as the mayor told us in the opening session on March 29. (2) The venue was at the eastern edge of Tennessee, near the entrance to the Great Smoky Mountains National Park (see Plate 1, Fig 1). (3) On the first day at the plenary session, Dr. Peter White, Director of the North Carolina Botanical Garden (UNC-Chapel Hill), presented an eloquent speech on conservation and management of Great Smoky Mountains National Park. The special symposium on the following day, “All Taxa Biodiversity Inventory—A Search for Species in our Backyard”, with morning and afternoon sessions that included two dozen scientific presentations, highlighted the plant and animal communities of the Great Smoky Mountains National Park. All ASB members in Gatlinburg, maximum we ever had as pointed out by ASB President Dwayne Wise in his presidential remarks, found the 2006 meeting most enjoyable.

I came to Gatlinburg by car all the way from North Carolina’s Atlantic coast (Wilmington) through the higher elevations of the Grand Father Mountains which the late Hugh Morton (a photographer and conservationist) promoted as a national treasure and nature preserve. Despite the distance, it was a treat to drive through the Appalachian Hills and particularly the Smoky Mountains (see Plate 1 Figs 2-4) which attained its pinnacle of beauty in the spring bloom with occasional wanderings of wild pheasants and turkeys. I also came to Gatlinburg as 2005-2006 chair of the ASB conservation Committee. Nevertheless, I pointed out in the committee report that even though ASB passed a resolution in 2005 to express our concern on “Endangered Species”, the US Congress at the House of Representatives took steps that encouraged developers to get rid of critical habitat status to vulnerable areas that accommodated populations of endangered species. Therefore, the reauthorization of the “Endangered Species Act (ESA)” is in jeopardy.

At Gatlinburg, we also passed another resolution that addressed the “non-native invasive species” in the southeastern United States. This important resolution, that has a bearing on the health of the aquatic and land ecosystems, was originally brought to my attention as ASB conservation committee chair by ASB former president Patt Parr. The resolution was endorsed by the ASB membership in Gatlinburg with enthusiasm. We do not realize that a species of red fire ant was brought to United States from Brazil by unintentional accident. The fire ant populations exploded in a matter of few years, invading rapidly

toward north. The cost to combat the red fire ant is estimated as 6 billion dollars that is same as the entire budget of US National Science Foundation. It is really appalling!

Another recent invasive species is the colorful and venomous lionfish, a native of Indo-Pacific Ocean. Some tourists from Florida fetched a pair of lionfish in one of their diving adventures for their home aquarium. Lo and behold, the male and female lionfish were released into the sea off Atlantic coast of Florida and eventually the lionfish reproduced in the alien coastal waters of conducive high temperature and began spreading to the north, aided by the northward flowing Gulf Stream. This episode is not too different from that of the python snakes brought to Florida from foreign countries as pets. These giant snakes escaped into wilderness and became predators devouring the lower trophic levels, thus impacting the very trophic structure of natural ecosystems.

How do we put an end to this ecological nuisance species? While serving on the editorial board of the ASB-endorsed journal—*Southeastern Naturalist*—I encouraged scientists in the Marine Resource Center in Charleston, South Carolina, when they submitted a paper in this journal on the episode of lionfish invasion from Florida to North Carolina continental shelf. I got their paper reviewed by peers. Finally the paper appeared in the journal. Thanks to the publishers, “Humboldt Institute in Maine” for making lionfish as the cover page photo of this particular number that carried the article. This is one way to bring to focus the urgent need to introduce bills in the US Congress to enact laws (ACTS) to stop the invasion of non-native and harmful or unharmed species of plants and animals in the ecosystems of the United States. In fact I gave a copy of the journal with lionfish photo to a prominent US Senator (Plate 2, Fig. 1).

In Gatlinburg on March 28, 2006, as chair of conservation committee I sat in the ‘ASB Executive Committee’ meeting and suggested that at the ‘business meeting’ we introduce a “Scientists’ Statement of Concern on the Endangered Species Act–ESA reauthorization”. My proposal was discussed and the EC unanimously decided to make it a petition to US Congress as my initiative (rather than ASB’s) with signatures from ASB membership (more than a 1000 members and about 700 in attendance at Gatlinburg) during this annual meeting. I then rolled up my sleeves and generated the following statement for signatures at the 2006 Gatlinburg meeting.

“We, the undersigned, as members of the Association of Southeastern Biologists (ASB) appeal to the US Congress, that the Senate should reevaluate the House Bill on the ‘Endangered Species Act’ which needs updating since its inception 33 years ago. Presently 1300 plant and animal species are listed as endangered and 30 species became extinct in the last 3 decades. Coastal habitat loss and deterioration, as evidenced in the *Katrina* hurricane impact on coastal states in the Gulf of Mexico (in particular Louisiana and Mississippi coasts), present compelling reasons for revitalizing the ESA now. We therefore recommend that the US Congress reauthorize ESA with appropriate and innovative methods to maintain, improve and restore species habitats on land, coastal wetlands, salt marshes, estuaries, beaches, shelf and offshore deep-water cold coral habitats within the US EEZs (Exclusive Economic Zones). ASB passed a resolution on endangered species, put forth by the ASB Conservation Committee, presented it to the membership by the ASB resolution committee and voted favorably for action by the membership in ASB 2005 meeting in Florence (Muscle Shoal=Mussel Shoal) meeting in Alabama. We, therefore, applaud the



House for improving the ESA but appeal for further improvement (by adding appropriate threatened species to endangered species list). We urge the US Senate for further improvement and swift action to reauthorize the bill soon for executive action by the President of the United States”.

I am pleased to report that 60 ASB members signed this “statement of scientists’ concern” in Gatlinburg. We stopped getting signatures when we got 60 and we could have got signatures as many as 500 in Gatlinburg. I am thankful to my colleague Ms. Julia Berger, new ASB member and member of the science advisory committee of my organization—*George Institute for Biodiversity and Sustainability*—for her enthusiasm in Gatlinburg for fetching half the number of signatures (I got the other 50%). The petition was signed by 7 ASB past presidents. I submitted the signed (xeroxed) copies of the petition to appropriate US House Representatives and US Senators. I am keeping my finger (and toes) crossed for action.

We face today a situation wherein priorities are reversed. For example, environmental protection, along with education, remain at the bottom of congressional priorities. This scenario is really reflection of lack of funds for improving the budget of agencies such as National Science Foundation (NSF) and National Oceanic and Atmospheric Administration (NOAA). Two major national commissions, PEW Ocean Commission and US Commission for Ocean Policy, recommended firmly and wisely that we need to protect our environment by adopting the ‘Ecosystem Based Management’. We in the southeast are pounded by increased incidence of category IV and V hurricanes and our coastal ecosystems are threatened by climate change. Global warming has become a problem and Al Gore, in his book/movie on “Inconvenient Truth”, cautions that in 10 years the damage to “Nature” may become irreversible. In my opinion, it may not be that soon but his warning ought to be taken seriously by scientists and policy-makers alike.

Our wetlands are in trouble. The ‘Clear Water Act’ calls for Army Corps of Engineers to get permission before filling wetlands that are in link with navigable bodies of water. Supreme Court justices differ in their definition of wetlands. Jim Titus of the Environmental Protection Agency (EPA) published a paper entitled “Does the U. S. Government Realize that the Sea is Rising?” He warned of the need to preserve wetlands and beaches in the face of global warming. During my tenure as ASB conservation committee chair, I conducted a national symposium on the impact of global warming at the 2005 AAAS (American Association for the Advancement of Science) in Washington, DC with 7 prominent scientists as invited speakers. In the coming years ASB needs to give emphasis on environmental issues with symposia and workshops. In essence, this was the recommendation of the conservation committee at the 2006 Gatlinburg meeting.

The Friday night ASB banquet on March 31, 2006 was eventful with speeches and meritorious awards to students and college faculty. As usual the performance of Tri-BETA students was superb. The Tennessee school teacher, who sat in the same table with me and my colleagues, was thrilled to receive the “ASB Best Teacher Award”. Also, Dr. Kim Marie Tolson, a conservation biologist at the University of Louisiana in Munroe, officially assumed charges as President of ASB for 2006-2007. I met her at the end of the banquet and gave her a copy of the petition to US Congress for the reauthorization of the ‘Endangered Species Act’ (ESA). I asked Kim to give “conservation” the priority it deserves in the coming year. When we meet in 2007 at the University of South Carolina in



Columbia, we will see signs of revitalization of conservation goals to protect our threatened aquatic and land ecosystems. In Columbia, S. C. at the 68<sup>th</sup> ASB annual meeting I will, as immediate past chair of the ASB Conservation Committee, propose that ASB should create a representative to 'Society of Conservation Biology' (SCB) and will send the elected person to annual meetings of SCB as ASB spokesperson.

Let me now turn to the light side of the 2006 ASB annual meeting. As usual the 'Thursday Night Social' on March 30 was indeed the highlight of the meeting and so it was. The event occurred in the newly renovated Mills Auditorium in the Gatlinburg Convention Center. The tall cathedral-like roof and the local band playing on the stage made the evening rather exciting for the audience that listened to both boring and fascinating talks (papers) all day. There was a copious quantity of beer to boost the mood of the gathering. Noise pollution also made some folks retire early in the evening for a peaceful walk in the streets of this elegant mountain town Gatlinburg. We say: "One picture is worth a thousand words". Therefore, I am presenting with this article a few pictures that depict this gala Gatlinburg event (Plate 2 Figs. 2- 4).

### Plate 1—Places

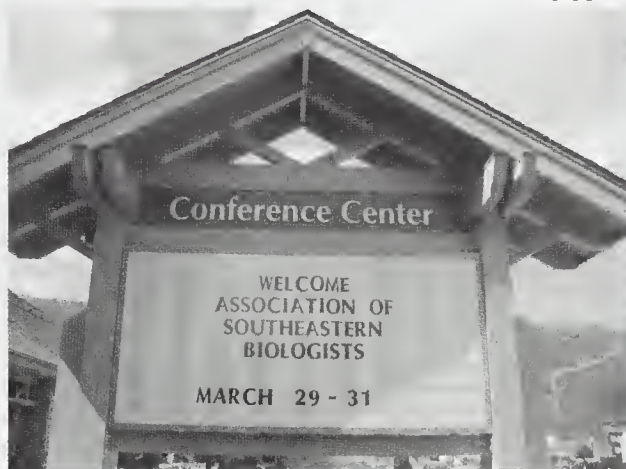


Fig. 1. Welcome sign for ASB 2006. Note the visibility behind the sign showing clouds and sky. Thanks to local arrangements committee for keeping the sun shining for four days.



Fig. 2. Entrance to Great Smoky Mountains National Park. Yes, President Theodore Roosevelt was wise to listen to early 20<sup>th</sup> century conservationist John Muir & establish the national parks for saving nature.

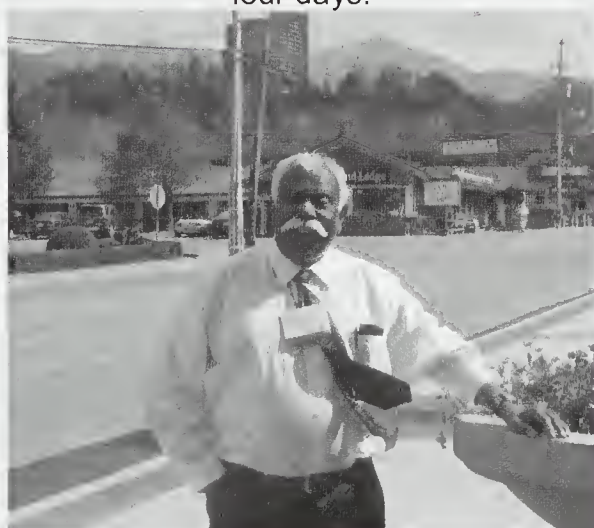


Fig. 3. Bob George with ASB tag in Gatlinburg. See the Appalachian hills in the background.



Fig. 4. Gatlinburg city scene with the convention center on the left & a nice hotel we stayed on right (one minute walk to meetings).

## Plate 2—People



Fig. 1. Bob George (right) discussing "Endangered Species Act" (ESA) with vice-presidential candidate Senator John Edwards at the U.S. Senate Office.



Fig. 2. John and Lucrecia Herr at the Thursday night social.



Fig. 3. ASB 2006 attracted several children (future biologists). See the couple dancing with their child while the orchestra was playing at the Thursday night social.



Fig. 4. From left to right: ASB Past President Lafayette Frederick, his wife Antoinette, colleagues, and graduate students at the Thursday night social.



## LONGTIME MEMBER OF ASB HONORED BY BSA

## Lafayette Frederick



BOTANICAL SOCIETY OF AMERICA

Botanical Society of America

P.O. Box 299

St. Louis, MO 63166-0299

Phone: 314-577-9566

FAX: 314-577-9515

www.botany.org

February 23, 2006

Dr. Lafayette Frederick  
Howard University, Department Of Biology  
415 College St Nw  
Washington, DC 20059

Dear Dr. Frederick:

In honor of our Centennial Celebration, the Botanical Society of America is pleased to be recognizing leading scientists and Society members for their contributions to the plant sciences. We will do so by presenting special BSA Centennial Awards at the Botany 2006 Conference in Chico, California, on August 2, 2006.

Dr. Frederick, we are pleased to inform you that you have been chosen by your peers and BSA leaders to receive a Centennial Award. The Botanical Society of America sincerely thanks you for your contributions to the advancement of the plant sciences and looks forward to your participation in our special awards ceremony.

You will receive your award at the special centennial reception, hosted by Drs. Peter H. Raven and Ed Schneider during the Botany 2006 Conference on Wednesday, August 2, 2006, beginning at 3:00 p.m. We invite you to the Botanical Society of America's banquet as our guest later in the evening. We hope very much that you can attend both the reception and the banquet.

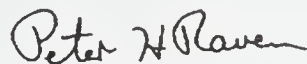
Plant sciences have evolved a great deal over the past 100 years. Behind this evolution, dedicated people such as you have played a critical role. Scientists and the systems that support their work, and the propagation of the knowledge and new ideas they create, and students they foster are essential components of society. As a major scientific society, we appreciate and applaud your efforts.

The Botanical Society of America was formally established in 1906 and has been a bastion of support for the plant sciences and developing plant scientists over the past century. We look forward to this role well into the future.

Sincerely,



Dr. Edward Schneider  
President



Dr. Peter H. Raven  
Past President

ES/PHR/wl

*The Botanical Society of America is a scientific and educational organization devoted to the fundamental study of the form, function, development, diversity, evolution and uses of plants and their interactions within the biosphere.*

Letter reprinted with permission.



The following biography of Lafayette Frederick appeared in *The Scientist* 19: 29, November 7, 2005, Supplement 21 by Staff Writer Ishani Ganguli. Reprinted with permission.

## LAFAYETTE FREDERICK

Lafayette Frederick was born in Dog Bog, Mississippi, and grew up with five brothers and sisters on a cotton farm in Missouri, where his sharecropper father taught him and other local kids in a one-room schoolhouse that doubled as a church. Working on the farm, Frederick became deeply interested in agriculture. He remembers studying flower structure in a biology textbook, then finding he could learn more by just taking apart a flower from the family's garden.

Fascinated by the work of Tuskegee University alumnus George Washington Carver, Frederick went at the age of 16 to the traditionally African-American university and pursued a BS degree in technical agriculture. Here, Frederick met mentors such as Harold Romm, who introduced him to the study of botany.

Anticipating the military draft for World War II, Frederick moved to Washington State with friends and was able to parlay his skills into work as an electrician's assistant, an unusual white-collar job for an African American at that time. He entered the Navy in 1944, and was posted to Pearl Harbor where he worked as an architectural draftsman. By the time the war ended and Frederick could use the GI bill to pay for graduate school, studying botany was no longer an obvious first choice. But his first passion prevailed, and Frederick stayed on to study native plants at the University of Hawaii. He then completed a master's degree with a project on Dutch elm disease at what is now the University of Rhode Island and received his PhD in plant pathology at what is now Washington State University.

Romm recruited Frederick to the biology department at Southern University in Louisiana, where Frederick developed a botany concentration during his 10 years at the school. He did the same at Atlanta University, where he chaired the biology department during his 14-year tenure. In 1976, Frederick came to Howard University in Washington, DC, where he chaired the botany department and is now professor emeritus.

As an African-American scientist, Frederick has to break significant barriers to end up where he is today. "I'd go to meetings, there would be hardly any blacks there. I wanted to change that situation." In 1958, Frederick was responsible for integrating the Association of Southeastern Biologists meeting, which had not allowed its African American members to attend.

Since his days at Southern, Frederick has worked to get black students excited about making new discoveries, an effort that includes taking students to scientific conferences. He once drove a car full of students from Atlanta to a conference in Alberta, Canada. "Some of my colleagues at other schools asked, 'Haven't you ever heard of airplanes?' I said, sure I've heard of airplanes, but if I come by airplane, I can't bring the students."

Frederick is still in touch with more than 40 of his former students, and quite a few have gone onto successful careers of their own in plant biology. In 1991,

the American Association for the Advancement of Science recognized his tireless efforts in guiding young black scientists by presenting him with the AAAS Mentor Award for Lifetime Achievement.

At age 82, Frederick still conducts research on Dutch elm disease and lives with his wife of more than 50 years and one of their ten grandchildren outside Washington, DC.

--Ishani Ganguli



Antoinette and Lafayette Frederick.





## **ASB Southeastern Biology Staff, ASB Officers, and Executive Committee Members-at-Large, 2006-2007**

Telephone numbers, Fax numbers and e-mail addresses can be found on the inside front cover of each issue of the *Southeastern Biology*.

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	Robert Wayne Van Devender, Department of Biology, Appalachian State University, Boone, NC

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---

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**Nitya Jacob**, Department of Biology, Division of Natural Sciences and Mathematics, Oxford College of Emory University, Oxford, GA 30054; 770-784-8346, FAX 770-784-8423; njacob@learnlink.emory.edu.

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❧



The ASB Presidential Group at the Friday night banquet. From left to right: President-Elect Michael Dennis, President Kim Marie Tolson, and Past President Dwayne Wise.





## **2007 MEETING OF THE ASSOCIATION OF SOUTHEASTERN BIOLOGISTS**



**COLUMBIA METROPOLITAN CONVENTION CENTER  
COLUMBIA, SOUTH CAROLINA  
APRIL 18-21, 2007**

# CALL FOR PAPERS

(this is the only call)

## THE 68<sup>TH</sup> ANNUAL ASB MEETING

HOSTED BY:



UNIVERSITY OF SOUTH CAROLINA  
COLUMBIA



Please note the following deadlines that are to be met before our 68th annual meeting. **This will be the only call for papers!**

**15 OCTOBER** Nominations for ASB officers and executive committee due to the Nominations Committee.

**1 DECEMBER** Titles and abstracts of papers and posters, including those applying for awards, due to the Program Committee. This will be the **only** call for papers. They must reach the Program Committee by this date.

**1 DECEMBER–20 JANUARY**

Submission materials for research awards due to respective research awards committees.

**23 JANUARY** Meritorious Teaching Award materials due to Meritorious Teaching Award Committee. Application for graduate student travel awards due to Graduate Student Travel Awards Committee.







## LOCAL COMMITTEE ASSIGNMENTS FOR THE 68<sup>TH</sup> ANNUAL MEETING UNIVERSITY OF SOUTH CAROLINA COLUMBIA, SC

<i>Local Arrangements Chair:</i>	John Herr herr@biol.sc.edu	(803) 777-8110
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<i>Hotel Accommodations:</i>	Scott Jewell (the MC)*	
<i>*Meeting Coordinator (MC):</i>	Scott Jewell a2zconvention@yahoo.com	(336) 421-0034

## PAPER & POSTER SUBMISSION DOCUMENTS FOR 2007 MEETING

**DEADLINE: FRIDAY, 1 DECEMBER 2006**

*Individuals presenting papers or posters are expected to be members of ASB or an affiliate society!*

### INSTRUCTIONS FOR SUBMITTING ABSTRACTS

Submit a single e-mail message with **two** attachments in word document format to the program chair, David Lincoln (lincoln@biol.sc.edu). The two attachments should be titled, "Author Information" and "Abstract". DO NOT submit author information or abstracts within the text of the e-mail message.

#### **ATTACHMENT 1 (Titled "Author Information")**

Number and list the following information items:

1. AUTHOR(S)
2. INSTITUTION(S)
3. 1<sup>st</sup> AUTHOR PHONE/FAX
4. 1<sup>st</sup> AUTHOR E-MAIL
5. ABSTRACT TITLE
6. PRESENTATION TYPE: PAPER or POSTER

**NOTE:** All oral presentations will be on PowerPoint with a backup copy on a CD disk or flash memory drive. Slide projectors will not be available. Poster space is 4' x 4'. Bring your own pins or Velcro.

7. CHOOSE THE APPROPRIATE SECTION(S) TO WHICH YOUR PAPER OR POSTER SHOULD BE ASSIGNED. IF YOU CHOOSE MORE THAN ONE, RANK SECTIONS AS TO YOUR PREFERENCE (1 = MOST PREFERRED).

Animal Behavior  
Animal Ecology  
Animal Physiology  
Aquatic, Wetland & Marine Mgmt.  
Developmental Biology  
Genetics, Cell & Molecular Biology  
Herpetology  
Ichthyology

Invertebrate Zoology & Entomology  
Microbiology  
Ornithology  
Parasitology  
Plant Biology  
Plant Ecology  
Plant Systematics  
Teaching Biology

8. **AWARDS:** If you intend to apply for one of the following awards, please indicate this so that the Program Committee can schedule talks appropriately. You must indicate that you want to be considered for an award during the abstract submission. Students must be first author to be considered for student awards.

For many awards, you **MUST** also submit an abstract to the award committee chairperson. Please see applicable rules for each award at <http://www.asb.appstate.edu/Awards%202007.htm> and in this issue. If you do not follow these instructions, you may not be considered for the award.

ASB Senior Research Award (\$1,000). Sponsored by Associated Microscopes, Inc.

ASB Student Research Award (\$1,000). Sponsored by Martin Microscope Company.

Brooks/Cole Student Research Award in Aquatic Biology (\$200). Sponsored by Thomson Learning Brooks/Cole Publishing Company.

ASB Research Award in Microbiology (\$500). Sponsored by Thomson Learning Brooks/Cole Publishing Company.

ASB Student Poster Award (\$300). Sponsored by ASB.

Eugene P. Odum Award (\$500). Sponsored by the SE Chapter of ESA.

Elsie Quarterman-Catherine Keever Award (\$300). Sponsored by the SE Chapter of ESA.

NC Botanical Garden Award (\$200). Sponsored by the NCBG.

SEASIH Student Travel Awards (\$50). Sponsored by the SE Chapter of ASIH. See <http://www.asih.org>. ASIH will meet in St. Louis in 2007

SEASIH Student Ichthyology Award (\$100). Sponsored by the SE Chapter of ASIH. See <http://www.asih.org>. ASIH will meet in St. Louis in 2007

SEASIH Student Herpetology Award (\$100). Sponsored by the SE Chapter of ASIH. See <http://www.asih.org>. ASIH will meet in St. Louis in 2007

SAC/SWS Student Travel Awards (\$100). Sponsored by the SA Chapter of SWS.

BSA Student Plant Science Award (\$100) plus travel expenses (\$300). Sponsored by the SE Section of BSA.

SFC Student Travel Awards (\$100). Sponsored by the SFC. See <http://www.asih.org>. ASIH will meet in St. Louis in 2007

## **ATTACHMENT 2 (Titled "Abstract")**

Please follow guidelines below.

The abstract must be in 9 point Arial (if your computer does not have Arial, use Times New Roman) with margins of 1 inch right and 2 ½ inches left. Text should be fully justified. Do not place hard returns at ends of lines; allow word wrapping. The abstract (not including the authors' names and addresses) must not exceed 250 words. Single space all typing.

1. Indent author, institution, and title information 1 tab stop (1/2 inch). Type in the following order: AUTHOR'S NAME(S) all capitalized; last name first for first author; other authors' names (if any), first names first. If two authors, separate



names with "AND". In the case of more than two authors, separate all but the last name with a comma and separate last two with "AND". End with a period

2. Institution(s) follow authors' names directly. Maintain the same indentation as names and end with a dash (—). In case of two or more authors from different institutions, place all author names together first, followed by all institutions in the same order. If necessary, key the authors' names to the institution with a superscript number.
3. Start the title immediately after the dash without a space. Capitalize first letter of first word, then only proper and scientific names as customary. Underline all of the title, and maintain the same indentation as the name and institution. End with a period. Leave one full blank line between title and abstract text.
4. Start text of abstract on a new line. Do not indent first line. Use one paragraph for entire text. Do not put any reference citations in the abstract. Justify both left and right margins. 250 word maximum.
5. Single space all typing. Put taxonomic names in italics.

## EXAMPLES

RADENBAUGH, TODD A. United States Peace Corps, Jamaica—Major plant community types of Duncan Bay, Jamaica, West Indies.

There is an urgent need to record and describe the coastal ecosystems on the North coast of Jamaica before they are severely altered by human.....

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DAVIS, JENNIFER<sup>1</sup> AND DWAYNE WISE<sup>2</sup>. Shorter College<sup>1</sup> and Mississippi State University<sup>2</sup>—Causes and consequences of elevated levels of meiotic abnormalities in laboratory colonies of the crane fly *Nephrotoma suturalis*.

Progeny of wild-caught crane flies were compared to a laboratory colony of *Nephrotoma suturalis* for mean % chromosomal abnormalities, mean % survival, and parameters indicative of .....

## INSTRUCTIONS FOR SUBMITTING ORAL PRESENTATIONS

All oral presentations will be done using Microsoft PowerPoint only. Presenters should bring a backup copy on a CD disk or flash memory drive. Complete and final presentations must be submitted on CD to the audiovisual coordinator to be received by April 11. The first author's name and truncated title should be written on the upper surface of the CD using an indelible marker.

Submit the CD to be received by the April 11 deadline to: **ATTN: ASB 2007 Annual Meeting, c/o Mr. Clint Cook, Department of Biological Sciences, University of South Carolina, Columbia, SC 29208.**





## ASB-COLUMBIA 2007 FIELD TRIPS

The list of field trips is tentative. More information will be available in the December issue of *SE Biology*.

Columbia South Carolina is rich and diverse in botanical and zoological ecosystems. A comprehensive list of field trips are being planned that will stimulate the mind and excite the soul. Plan early to attend one of the Saturday trips.

1. **Congaree Bluffs Heritage Preserve**, Calhoun County SC. 9:00 am-1:00 pm. Trip leader: Ann Darr, SCDNR. One of the newest members of South Carolina's heritage sites, situated on the south side of the Congaree River. You won't want to miss this exciting opportunity to visit the magnificent 200 foot riverine bluffs.

2. **Flat Creek Heritage Preserve**, Lancaster County SC. 9:00 am-1:00 pm. Trip leader: Kathy Boyle, SCDNR. During this field trip you will be rewarded with the best developed granitic flatrock ecosystems in the Southeast.

3. **Congaree National Park**, Richland County. 9:00 am-1:00 pm. L. L. Gaddy, Terraincognita, Inc. A complex of various bottomland ecosystems, along with mesic bluff communities; the largest contiguous tract of virgin forest remaining in South Carolina, and home to a number of national champion trees. This will be an experience you will never forget!

4. **Stevens Creek Heritage Preserve**, McCormick County SC. 9:00 am-1:00 pm. Trip leader: Rudy Mancke, USC. One of the Southeast's most diverse botanical sites, featuring a large number of rare species.

5. **Birding In South Carolina**: Destination, time TBA. Trip leader: John Cely. Destination, time TBA. Characteristic avian fauna of the SC midlands, led by one of the state's top ornithologists.

6. **Herpetology In South Carolina**, Hampton and Jasper Counties SC, SCDNR properties. 9:00 am-until? Trip leaders: Stephen Bennett, SCDNR, Julian Harrison, College of Charleston. Reptiles and amphibians, and their habitats, from a variety of low-country sites.

7. **Sandhill Excursion-Gamecock Style**: Peachtree Rock Heritage Preserve, Shealy's Pond Heritage Preserve. 9:00-until? Trip leaders: Bert Pittman, SCDNR, Wayne Grooms. The first Nature Conservancy Preserve in SC, now a Heritage Preserve. Unusual geologic formations support a variety of habitats and rare species.

### Activities for Guests

There are a plethora of interesting places to visit not too distant from the Columbia Convention Center. The short list includes: Riverbanks Zoo and Botanical Garden; State Museum, Confederate Relic Room and Museum; McKissick Museum and USC Visitor Center; Columbia Riverfront Park and Historic Canal; and the Caroliniana Library, the first free-standing college library in the United States. Among many other attractions are several homes open to the public: *Hampton-Preston Mansion and Gardens*, Built in 1818, this restored antebellum mansion is furnished with Hampton and Preston family pieces; *Mann-Simons Cottage*, Celia Mann, an enslaved Charleston midwife who acquired her freedom and walked to Columbia, lived here from the 1840s until 1867; *Robert Mills House & Park*, This restored mansion was built in 1823 and designed by South Carolina's most famous architect, Robert Mills; and the *Woodrow Wilson Family Home*, Woodrow Wilson, the nation's 28th president, spent four years of his youth in Columbia. He and his family lived in this home built by his parents in 1872.





**ANNOUNCING THE ASB**  
***Thursday Night Social***  
***“A Night of Beach”***

ASB has a historic reputation for hosting an exciting and fun-filled Thursday Night Social. And this year is no different!!!!

We are bringing the Beach to Columbia!!! This year's event will be held at the brand new Strom Thurmond Wellness & Fitness Center on the beautiful campus of the University of South Carolina. This world-class facility has over 192,000 square feet of indoor space, outdoor pool and sand volleyball courts.

Since 1971, The Second Nature Band has been a regional favorite for Country Clubs, College Campuses, Reunions and Convention Groups. They will provide an evening of the most popular Beach & Dance Music and are a top choice for Festivals and Beach Shows. The band's repertoire contains exceptional variety to excite any gathering. Bring your sliding dancing shoes.....you will want to learn “The Shag” that was invented in South Carolina.

The outdoor pool will be open (life-guards will be on duty) and sand volleyball courts will also be available for everyone to enjoy!

Bring your swimsuit, your appetite, your dancing shoes and yourself to this sure-to-be-fun night of enjoyment!!!

ASB will provide continuous transportation to/from the event—no driving required!



**Outdoor Pool Area**  
**Strom Thurmond Wellness & Fitness Center**

## ***SPECIAL REMINDERS FROM THE PRINT EDITOR***

### ***ASB BANQUET ATTENDANCE***

Please keep in mind that recipients of ASB awards must be present at the annual ASB banquet to receive the award. Therefore, all applicants for ASB awards must attend the banquet to insure the presence of the winners.

### ***EXTRA ABSTRACT SUBMISSION***

Besides sending abstracts of papers and posters to the Program Committee by December 1, 2006, anyone wishing to be considered for an award must send an abstract to the respective award committee chairperson in order to be considered. Checking the box on the registration form for the award is not enough. An abstract must be sent to the chairperson by January 20, 2007.

### ***INSTRUCTIONS FOR SUBMITTING ORAL PRESENTATIONS***

All oral presentations will be done using Microsoft PowerPoint only. Presenters should bring a backup copy on a CD disk or flash memory drive.

### ***FINAL SUBMISSION OF CD***

**Complete and final presentations must be submitted on CD to the audiovisual coordinator to be received by April 11.** The first author's name and truncated title should be written on the upper surface of the CD using an indelible marker.

Submit the CD to be received by the April 11 deadline to: ATTN: ASB 2007 Annual Meeting, c/o Mr. Clint Cook, Department of Biological Sciences, University of South Carolina, Columbia, SC 29208.

Nomination for ASB Officers and Executive  
Committee Positions

DEADLINE: 15 OCTOBER 2006

To members of the Nominating Committee: I wish to suggest that you consider the following ASB member(s) in selecting nominees for officers and executive committee positions. (*Please include the institutional address of each nominee.*)

PRESIDENT-ELECT \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

VICE-PRESIDENT \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

EXECUTIVE COMMITTEE (*two will be elected for three-year terms*)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**MAIL TO:** Dr. Claudia L. Jolls, Department of Biology, East Carolina University,  
Greenville, NC 27858-4353; (252) 328-6295; Fax (252) 328-4178;  
jollsc@ecu.edu.

NAME & ADDRESS OF NOMINATOR \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



## SUPPORT AWARDS FOR GRADUATE STUDENT MEMBERS OF ASB

### DEADLINE FOR POSTMARK: 23 JANUARY 2007

Limited funds are available to partially defray the expenses of graduate students attending the Annual Meeting. **The awards are for lodging and meals only, including the ASB Banquet.** Departments are urged to provide transportation for their graduate students. Recipients must be members of ASB. See ASB web site for membership application or renewal forms. The guidelines for application are as follows:

- (a) The recipient is a current member of ASB.
- (b) The recipient must be presenting a paper or poster at the Annual Meeting and must include a separate copy of the abstract of the paper or poster to be presented along with the application.
- (c) The recipient must be currently enrolled as a graduate student in the department where he/she conducted this research.
- (d) Student travel awards are granted on a competitive basis. Applicants must document expected expenses and list other sources of financial support for this meeting, including institutional aid, shared lodging and shared transportation.
- (e) In a paragraph, give a brief history of your education to date: indicate how many years you have been in graduate school and the expected date of completion of work for your degree, your major field of study and research, publications including those in press and in preparation, degree sought, name of major professor and any other pertinent details.
- (f) Give your source(s) of support while in graduate school: e.g. NSF, NIH, USDA, Teaching Asst., Research Asst., etc.
- (g) Include a letter of recommendation for an ASB support award from your faculty research advisor. This letter should comment on the work being presented and indicate the financial need of the student presenter. It should also indicate whether any departmental or other funding is available to the student.
- (h) Send application with supporting letter to: Dr. Rebecca Bray, Department of Biology, Old Dominion University, Norfolk, VA 23529; (757) 683-3610. In addition, e-mail a copy of your completed application documents without the supporting letter to [rbray@odu.edu](mailto:rbray@odu.edu).
- (i) Applicants will be notified of the decision of the Committee as soon as is practical. Recipients of the award will pick up their checks at the ASB table at the meeting.

## GUIDELINES FOR POSTER PRESENTATIONS

Poster sessions have been incorporated as a regular means of scientific presentation at the annual ASB meetings. This type of presentation provides a more informal environment that encourages a direct interchange of ideas and discussion between presenter and audience. Poster presentations are open to all ASB members. Adherence to the following guidelines helps ensure the effectiveness of the poster presentation and consideration for the award.

- (1) Display should fit on a 4' h x 4' w board suitable for thumbtacks, pushpins, or Velcro.
- (2) Poster must be displayed from 10 a.m. Thursday through 5 p.m. Friday. Authors will be required to be present at specified times during the Annual Meeting.
- (3) Poster should be carefully planned to maximize clarity and simplicity in conveying information.
- (4) Poster should have a heading, including a title, author, and author's institution(s). This heading should be placed at the top in letters no less than **3 cm** high.
- (5) The body of the poster, including text, figure legends, and table captions, should be in type no smaller than **18 pt (3-4 mm)** and *must* be legible from a distance of about 1-2 meters.
- (6) The body should be self-explanatory and should include figures, tables, graphs, maps, or photographs displayed in a well organized, coherent, and easy-to-follow sequence from top to bottom. Each illustration should contain a caption. *Do not overcrowd the display.* Significance will be one of the criteria looked for in judging the posters.
- (7) A limited degree of text may be included, but care should be taken not to overwhelm the audience.
- (8) A large, abbreviated version of the abstract should be presented at the top of the poster, but below the heading. A clear listing of specific conclusions should appear at the bottom or end of the presentation. An abstract must also be submitted to the award committee chair.

Further inquiries may be directed to the Chair of the ASB Poster Award Committee: Dr. Irene Kokkala, Department of Biology, North Georgia College and State University, Dahlonega, GA 30597; (706) 864-1368; Fax (706) 867-2703; [ikokkala@ngcsu.edu](mailto:ikokkala@ngcsu.edu).

## RESEARCH AWARDS

**SPECIAL NOTICE:** Please read carefully the description of requirements for the ASB award for which you apply. Note especially that recipients of ASB awards must be present at the annual ASB banquet to receive the award.

### ASB SENIOR RESEARCH AWARD (\$1000)

Given for an especially meritorious manuscript presented orally by the author(s) at the Annual Meeting of ASB. The presenter must be a member of ASB. In order to qualify for this award sponsored by Associated Microscopes, Inc., the author(s) must have presented the work orally at any previous annual meeting or have submitted an abstract by the 1 December abstract deadline for an oral presentation at the next annual meeting. The manuscript must either have been submitted for publication or be ready for submission and carry the format of the journal to which it will be (or has been) submitted. Author(s) must submit four copies of their manuscript and short biographical sketches of each author. Manuscripts received by 20 January 2007 will compete for the 2007 Senior Research Award. Manuscripts not received by this deadline (but submitted by 20 January 2007) will remain in competition for the 2007 Senior Research Award, subject to the following condition, which applies to ALL manuscripts eligible for this award: manuscripts may be in press, but not published prior to the last annual meeting. Judges will use a standard evaluation form that includes the following criteria: significance of ideas, soundness of hypotheses, originality (creativity), quality of methodology, validity of results, soundness of conclusions, clarity, completeness, organization, and contribution to the field. At the discretion of the Senior Research Award Committee, the award may be withheld or it may be split in case of a tie. *The recipient of the award must be present at the annual ASB banquet to receive the award.*

**Committee Chair:** Dr. Howard Neufeld, Department of Biology, Appalachian State University, Boone, NC 28608-2027; (828) 262-2693; Fax (828) 262-2127; [neufeldhs@appstate.edu](mailto:neufeldhs@appstate.edu).

### ASB STUDENT RESEARCH AWARD (\$1000)

Given for an especially meritorious manuscript presented orally by the author(s) at the Annual Meeting. In order to qualify for presenting the paper, the author(s) must submit an abstract by the December deadline. Papers submitted for the competition must be received in triplicate and in their entirety by the January deadline and must be journal-ready manuscripts worthy of publication. The student award (sponsored by Martin Microscope Company) is given to the senior author if she/he is a graduate or undergraduate student at the time of presentation. To qualify, author(s) must submit an abstract, title form, and application for the award by 1 December 2006, and four copies of the journal-ready manuscript with abstract, title form, and short biographical sketches of each author by 20 January 2007. Judges will use a standard evaluation form that includes the following criteria: significance of ideas, soundness of hypotheses, originality (creativity), quality of methodology, validity of results, soundness of



conclusions, clarity, completeness, organization, and contribution to the field. At the discretion of the Student Research Award Committee, the award may be withheld or it may be split in the case of a tie. Papers may be in press, but not published prior to the previous annual meeting. Only members of ASB are eligible and the recipient of the award must be present at the annual ASB banquet to receive the award.

**Committee Chair:** Dr. Dennis Haney, Department of Biology, Furman University, 3300 Poinsett Highway, Greenville, SC 29613; (864) 294-2050; Fax (864) 294-2058; dennis.haney@furman.edu.

### **BROOKS/COLE STUDENT RESEARCH AWARD IN AQUATIC BIOLOGY (\$200)**

The purpose of the award is to encourage excellence in aquatic biology research by undergraduate and graduate students. The award is sponsored by Thomson Learning Brooks/Cole Publishing Company. Students who are members of ASB and whose work is sponsored by a professional biologist who is also an ASB member are eligible. The paper must be based on research designed and completed by the student and it must be presented orally by the student as senior author at the Annual Meeting. To be eligible, author(s) must submit an abstract, title form, and application for the award by 1 December 2006, four copies of the journal-ready manuscript with abstract, title form, and short biographical sketches of each author by 20 January 2007 and a letter from the sponsor affirming student status at the time the research was completed and sponsorship of the student to the chair of the Student Research Award Committee. Judges will use a standard evaluation form that includes the following criteria: significance of ideas, soundness of hypotheses, originality (creativity), quality of methodology, validity of results, soundness of conclusions, clarity, completeness, organization, and contribution to the field. At the discretion of the Student Research Award Committee, the award may be withheld or it may be split in the case of a tie. It is intended that aquatic biology be broadly interpreted. For example, research projects on aquatic organisms, wetland biota, and water quality are all eligible. The recipient of the award must be present at the Annual ASB Banquet to receive the award.

**Committee Chair:** Dr. Dennis Haney, Department of Biology, Furman University, 3300 Poinsett Highway, Greenville, SC 29613; (864) 294-2050; Fax (864) 294-2058; dennis.haney@furman.edu.

### **ASB RESEARCH AWARD IN MICROBIOLOGY (\$500)**

Sponsored by Thomson Learning Brooks/Cole Publishing Company, the award is given for an especially meritorious oral presentation of research results by the author(s) at the annual meeting. The purpose of the award is to stimulate greater participation at the Annual Meeting in the broad area of prokaryotic and eukaryotic microbiology including cell biology and physiology, molecular biology, and genetics. The presentation must deal clearly with one of these topics and should represent substantially completed work. In order to qualify for this award, the senior author must request consideration for the award on the abstract

submission form, submit one copy of the title and abstract to the ASB Program Chair by the 1 December 2006 deadline, and submit a second copy by the same date to the Microbiology Award Committee Chair. **Only members of ASB are eligible and the recipient of the award must be present at the Annual ASB Banquet to receive the award** (go to <http://www.asb.appstate.edu/member.htm> for membership application or renewal form).

**Committee Chair:** Dr. Kenneth Shull, Department of Biology, Appalachian State University, Boone, NC 28608-2027; (828) 262-2675; Fax (828) 262-2127; [shulljk@appstate.edu](mailto:shulljk@appstate.edu).

### **ASB STUDENT POSTER AWARD (\$300)**

Given for an especially meritorious poster presentation by the author(s) at the Annual Meeting. The purpose of the award is to stimulate greater student participation at the Annual Meeting. To qualify for this award, the senior author **must be a graduate or undergraduate student at the time of presentation, must be a member of ASB, must submit an abstract by the 1 December 2006 deadline, and must be present at the Annual ASB Awards Banquet.** Student poster presentations must also adhere to the "Guidelines for Poster Presentations." Only student authors who request consideration for the poster award on the abstract submission form will be judged for the award. In addition to adherence to the "Guidelines for Poster Presentations," student poster presentations will also be judged using the following specific criteria:

- (1) Overall aesthetics and attractiveness of presentation
- (2) Ease of reading from a distance (1-2 meters)
- (3) Clear and concise organization
- (4) Clearly stated hypothesis or study objectives
- (5) Soundness of methods for testing hypotheses or meeting study objectives
- (6) How well conclusions are supported by results

At the discretion of the ASB Poster Award Committee, the award may be withheld or it may be split in the case of a tie. Some posters may also be awarded "Honorable Mention" at the discretion of the ASB Poster Award Committee (Honorable Mention awardees receive no monetary award). Further inquiries may be directed to the chair of the ASB Poster Award Committee.

**Committee Chair:** Dr. Irene Kokkala, Department of Biology, North Georgia College and State University, Dahlonega, GA 30597; (706) 864-1368; Fax (706) 867-2703; [ikokkala@ngcsu.edu](mailto:ikokkala@ngcsu.edu).

### **EUGENE P. ODUM AWARD (\$500)**

Given by the Southeastern Chapter of the Ecological Society of America for the best ecological paper presented by a student. Undergraduate and graduate students are eligible, and the student must be the sole or senior author. The paper must deal with a clearly ecological topic and should represent substantially completed work. It should be presented in one of the following sections: Aquatic

Ecology, Plant Ecology, or Animal Ecology. One copy of the title and abstract should be sent to the ASB Program Chair by 1 December 2006, and a second copy must be sent by the same date to the Odum Committee Chair.

**Committee Chair:** Dr. Danny Gustafson, Department of Biology, The Citadel, Charleston, SC 29409; (843) 953-7876; Fax (843) 953-7264; danny.gustafson@citadel.edu.

### **ELSIE QUARTERMAN-CATHERINE KEEVER AWARD (\$300)**

Given by the Southeastern Chapter of the Ecological Society of America for the best ecological poster presented by a student. This award was given for the first time in 2005. Undergraduate and graduate students are eligible, and the student must be the sole or senior author. The poster must deal with a clearly ecological topic and should represent substantially completed work. It should be presented in a regular contributed poster session. One copy of the title and abstract should be sent to the ASB Program Chair by 1 December 2006, and a second copy must be sent by the same date to the Quarterman-Keever Committee Chair.

**Committee Chair:** Dr. James Luken, Department of Biology, Coastal Carolina University, P.O. Box 261954, Conway, SC 29528-6054; (943) 349-2235; Fax (843) 349-2201; joluken@coastal.edu.

### **THE NORTH CAROLINA BOTANICAL GARDEN AWARD (\$200)**

Given by NCBG (through the Southeastern Section of the Botanical Society of America and the Southern Appalachian Botanical Society). This is awarded for a paper presented at the annual ASB meetings that best advances our understanding of the biology and conservation of the southeastern plants and thus contributes to the mission of the North Carolina Botanical Garden. Of special interest to the Garden are the rare plant species of the Southeast: why they are rare; how they interact with plants, animals, and their environment; and what can be done to ensure their survival. The paper may deal with a broad area including systematics, ecology and conservation. All individuals who are eligible to present at the ASB meetings are eligible for this award. They may be students, faculty or others.

**Committee Chair:** Dr. John Randall, Department of Biology, University of North Carolina, Greensboro, NC 27412; (919) 962-0522; fax (919) 962-3531; jrandall@email.unc.edu.



### **SOCIETY OF WETLAND SCIENTISTS SOUTH ATLANTIC CHAPTER STUDENT TRAVEL AWARD**

The South Atlantic Chapter of the Society of Wetland Scientists (SWS) will again offer its student travel award to support students presenting wetland research at the ASB annual meeting. We will award at least \$100 to a maximum of five students. The Chapter's Awards and Executive Committees will judge the applicants based on the scientific quality and importance of their research as described in the abstract. All students presenting research on a wetland topic are eligible; membership in SWS is not required. Please check the appropriate box on the ASB registration form and submit the abstract as instructed in the ASB call for papers. Further, applicants must also submit their abstract, by electronic mail, to **Dr. Mary M. Davis at [mdavis@tnc.org](mailto:mdavis@tnc.org), at the same time the abstract is submitted to ASB.** Award winners will be invited to the Chapter's luncheon meeting (no charge for awardees) held during the ASB annual meeting. Dr. Davis's address: The Nature Conservancy, 1330 West Peachtree Street, Suite 410, Atlanta, GA 30309; (404) 253-7217; Fax (404) 873-6984.

### **BOTANICAL SOCIETY OF AMERICA SOUTHEASTERN SECTION STUDENT AWARD**

**Award:** A \$100 cash prize for the best paper in plant science presented at the annual meeting of ASB as well as \$300 toward expenses to participate in the annual meeting of the BSA and one year's paid membership in BSA.

**Who is eligible:** Undergraduate and graduate students are eligible. The student must be the sole or senior author of the paper. Any topic in plant science, broadly defined, can be considered.

**How to apply:** To be included in the competition, applicants should e-mail their abstract to the Botanical Society of America Southeastern Section Student Award committee chair *at the time of registration*. The winner will be announced at the ASB Banquet.

**Committee Chair:** Dr. Lytton John Musselman, Department of Biological Sciences, Old Dominion University, Norfolk, VA 23529-0266; (757) 683-3595; Fax (757) 683-5283; cell (757) 434-0982; [lmusselm@odu.edu](mailto:lmusselm@odu.edu).

### **SOUTHEASTERN MICROSCOPY SOCIETY**

The SEMS 2007 meeting will be held at the Holiday Inn in Decatur, Georgia, April 12-13. For more information about the meeting and awards, please check the website at <http://www.semicroscopy.org>.

**Honor Thy Teacher!**  
**ASB MERITORIOUS TEACHING AWARD**  
**DEADLINE JANUARY 23, 2007**

Each year the Association of Southeastern Biologists recognizes one of its members for especially meritorious teaching. Carolina Biological Supply Company, Burlington, North Carolina, generously sponsors this \$1500 award, which will be presented together with a plaque and appropriate citation at the Annual Banquet in Columbia, South Carolina in April, 2007.

The Meritorious Teaching Award Committee may each year select for the award a member of the association who has taught biology for at least ten years in any college or university represented in the association. There is no restriction on the size of the institution, nor must the institution have a graduate program. The award simply recognizes highly effective teaching. There are many deserving teachers in ASB. However, they cannot nominate themselves, so former students or colleagues must take an active role in assembling the materials that the committee will then evaluate.

Take the lead, pass the word – serve as the coordinator and nominate a deserving teacher! Solicit supporting letters from the nominee's present and former students. Contact his or her colleagues for additional endorsements. Document any form of recognition by the nominee's home institution of excellence in teaching, as well as special assignments and mentoring roles facilitating good teaching. Of special note would be the number and quality of students for whom the nominee provided primary inspiration to continue their study of biology, especially for students who subsequently earned advanced degrees. In short, document the educational impact this individual has made by virtue of his or her role as a biology professor.

Nominators should prepare a portfolio containing at least a letter of nomination, the nominee's current *curriculum vitae*, and supporting letters, together with the Nomination Form for the Meritorious Teaching Award and other relevant documentation. Submit all materials in triplicate by the January 23 deadline to: Dr. Larry Mellichamp, Department of Biology, University of North Carolina, Charlotte, NC 28223; (704) 687-4055; Fax (704) 687-3128; [tlmellic@email.uncc.edu](mailto:tlmellic@email.uncc.edu). If you have any questions, please call me or send an e-mail. Files for previously nominated candidates who did not receive the award will remain active for two additional years, and these files may be updated. The committee would welcome the task of deciding among several candidates.

Thanks for taking the initiative to nominate your favorite teacher!

Dr. Larry Mellichamp, Chair  
ASB Meritorious Teaching Award Committee



**NOMINATION-ASB MERITORIOUS TEACHING AWARD, 2007**

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

TEACHING INTEREST: \_\_\_\_\_

NOMINATOR NAME/ADDRESS: \_\_\_\_\_

SUPPORTING DOCUMENTATION: Letter of nomination \_\_\_\_\_  
(enclosed, in triplicate \_\_\_\_\_) Supporting letters \_\_\_\_\_  
*Curriculum Vitae* \_\_\_\_\_ Additional Information (list) \_\_\_\_\_

**ASB ENRICHMENT FUND AWARD**

ASB maintains an enrichment fund to support long- and short-range objectives to advance biological education through teaching and research. The Enrichment Fund Board is chaired by Bonnie Kelley. As has been the custom for the past several meetings, ASB recognizes individuals for their achievements and dedication to biology education at the secondary school level. The awardee is invited to attend the annual meeting and be honored. Expenses for attendance at the meeting are defrayed by the Enrichment Fund. The use of money from this fund shows appreciation for excellence in teaching at the secondary level, and to reach out to our colleagues in the teaching profession. Contributions to the fund can be made at the annual meeting or can be sent to the Treasurer of ASB whose address can be found in the inside front cover of this issue.



## **A LETTER FROM THE TREASURER**

Dear ASB Member:

As you know, ASB strives to serve the educational and scientific community in many ways. These endeavors also serve the world community.

ASB encourages the advancement of biology by

- The promotion of research in biology
- The increase and diffusion of knowledge of biology
- The application of biology to the solution of biological problems
- The preservation of biological resources
- Its meetings, reports, discussions, and publications to promote scientific interests and inquiry

Website: <http://www.asb.appstate.edu>

### **PURPOSE**

The Association of Southeastern Biologists was established in 1937 by biologists concerned with the quality of biological research in the southeastern United States. Today, ASB is the largest regional biology association in the country, and is committed to the advancement of biology as a science by the promotion of science education, research, and the application of scientific knowledge to human problems.

### **WHO WE ARE**

ASB members include faculty, students, researchers, conservation workers, military and government personnel, and business people with a common interest in biological issues in the southeastern United States. Interests are diverse, but range from genetics and molecular biology, to physiology and population ecology, to community and ecosystem ecology.

### **PATRONS**

Associated Microscope Inc, Elon College and Haw River, NC  
Tim Atkinson, Burlington, NC  
Breedlove, Dennis & Associates, Winter Park, FL  
Carolina Biological Supply Company, Burlington, NC  
Martin Microscope Company, Easley, SC  
Thomson Learning Brooks/Cole Publishing, Belmont, CA  
Marilyn Pendley, West Iredell High School, Statesville, NC

### **AFFILIATE SOCIETIES**

American Society of Ichthyologists and Herpetologists, Southeastern Division  
Beta Beta Beta, Southeastern Districts I and II  
Botanical Society of America, Southeastern Division  
Ecological Society of America, Southeastern Chapter  
Society of Wetland Scientists, South Atlantic Chapter  
Southeastern Fishes Council  
Southeastern Society of Parasitologists  
Southern Appalachian Botanical Society  
Society of Herbarium Curators

## AWARDS PRESENTED BY THE ASSOCIATION

The Association and its affiliates present a number of awards at the annual meeting. These include several for outstanding research, plus service awards.

### ASB Awards

**Meritorious Teaching Award** – presented in recognition of outstanding teaching and mentoring of students. This is the association's most prestigious award. Sponsored by Carolina Biological Supply Company, Burlington, NC.

**Student Research Award** – presented to a student member for outstanding research. A written manuscript is required as well as an oral presentation at the annual meeting. Sponsored by the Martin Microscopy Company, Easley, SC.

**Brooks/Cole Student Research Award in Aquatic Biology** – presented to that student whose research in aquatic biology is deemed outstanding. Sponsored by Thomson Learning Brooks/Cole Publishing Company, Belmont, CA.

**Senior Research Award** – presented to a senior member for outstanding research. A written manuscript is required as well as an oral presentation at the annual meeting. Sponsored by Associated Microscopes, Inc., Elon College and Haw River, NC.

**Student Poster Award** – presented to a student member who has the best overall poster at the annual meeting. Sponsored by ASB. **Travel Support Grants** – given to assist graduate students with expenses at the annual meeting. Sponsored by ASB.

**Research Award in Microbiology** – presented to a member for outstanding research in Microbiology. Sponsored by Thomson Learning Brooks/Cole Publishing Company, Belmont, CA.

### Affiliate Awards

**The North Carolina Botanical Garden Award** – sponsored by the NCBG. Presented to a member for outstanding research which best advances our understanding of the biology and conservation of the southeastern plants.

**Eugene P. Odum Award** – sponsored by the Southeastern Chapter of the Ecological Society of America. Presented to a student member for the most outstanding paper presentation in the field of ecological research.

**Elsie Quarterman-Catherine Keever Award** – sponsored by the Southeastern Chapter of the Ecological Society of America. Presented to a student member for the most outstanding poster presentation in the field of ecological research.

**Ichthyology and Herpetology Awards** – sponsored by the Southeastern Division of the American Society of Ichthyologists and Herpetologists. Presented to a student member for outstanding research in each of the two categories.

**Elizabeth Ann Bartholomew Award** – sponsored by the Southern Appalachian Botanical Society. Presented to individuals who have

distinguished themselves in professional and public service that advances our knowledge and appreciation of the world of plants.

**Richard and Minnie Windler Award** – sponsored by the Southern Appalachian Botanical Society. Presented annually to the author or authors of the best systematic botany paper published in *Castanea* during the previous year.

**Student Award in Plant Science** – sponsored by the Southeastern Section of the Botanical Society of America. Presented to a student for the most outstanding paper presentation in plant science.

**Byrd Award** – sponsored by the Southeastern Society of Parasitologists. Presented to a member for outstanding research in the field of parasitology.

## ANNUAL MEETING

Annual meetings are hosted by member institutions throughout the southeast. Meetings are in April, and include a distinguished plenary speaker, special symposia, field trips, oral and poster presentations of research, workshops, social events, exhibits, election of officers, and award presentations.

## MEMBERSHIP

The Association of Southeastern Biologists currently has about 1400 members, spread among 220 academic and 60 non-academic institutions.

## ACTIVITIES

The Association publishes a quarterly bulletin, *Southeastern Biology*, which contains the program of the annual meeting and abstracts of papers presented, book reviews, science news and information about scientists in the southeast, Association affairs, and special features of regional or timely interest.



## SEVEN REASONS TO BE AN ACTIVE ASB MEMBER

1. Subscription to *Southeastern Biology*, the Bulletin of the Association.
2. Privilege of presenting papers at the annual meeting.
3. Publication of your abstracts and articles in *Southeastern Biology*.
4. Participation in recognition, honors, and awards competition.
5. Representation of your interests in regional, national, and worldwide governmental, educational, and industrial programs concerning biology
6. A vehicle to showcase and support students' work in the biological sciences.
7. Participation is a commitment to your profession and your active support becomes part of over 60 years of significant biological legacy in the southeastern United States.





A contribution to the ASB Enrichment Fund will help to insure the continuation of these efforts. Please consider what you may do.

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**YES**, I want to contribute to the ASB Enrichment Fund!

I enclose my contribution of \$\_\_\_\_\_. Please use this to further the interests of ASB and its Members.

I would like to see the ASB Enrichment Fund used in the following areas (Check those you wish to support):

\_\_\_\_\_ Research Awards

\_\_\_\_\_ Student Research Awards

\_\_\_\_\_ Graduate Student Travel Grants

\_\_\_\_\_ Speakers & Programs for the Annual Meeting

\_\_\_\_\_ Outstanding Teacher Awards

Other (please list) \_\_\_\_\_

Please make any **checks payable to ASB**. Please mail your contributions and ideas to:

Tim Atkinson  
ASB Treasurer/Business Manager  
Carolina Biological Supply Company  
2700 York Road  
Burlington, NC 27215-3398

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## AIBS DIVERSITY SCHOLARS AND DIVERSITY LEADERSHIP AWARDS

### Applications and nominations due 3 July 2006 and 15 January 2007!

AIBS is now accepting applications and nominations for two awards that promote the participation of underrepresented minorities in the sciences:

- **The AIBS Diversity Scholars Program** recognizes outstanding minority undergraduate and graduate students. Diversity Scholars will receive a \$1,000 travel award to present research at a scientific meeting of the student's choice; free registration at the AIBS annual meeting; free 12-month membership in AIBS; and a free 12-month subscription to *BioScience*.

Submit applications by 3 July 2006 for meetings to be held between 1 January and 30 June 2007; for meetings between 1 July and 31 December 2007, the deadline is 15 January 2007.

- **The AIBS Diversity Leadership Award** recognizes programs and initiatives that actively promote a diverse community of biologists. AIBS welcomes nominations from scientific societies, K-12 institutions, colleges and universities, government agencies, nonprofit organizations, and community groups, as well as institutions such as museums, botanic gardens, and field stations.

Nominations for the Diversity Leadership Award are accepted throughout the year, with reviews conducted twice a year, at the end of January and at the end of July.

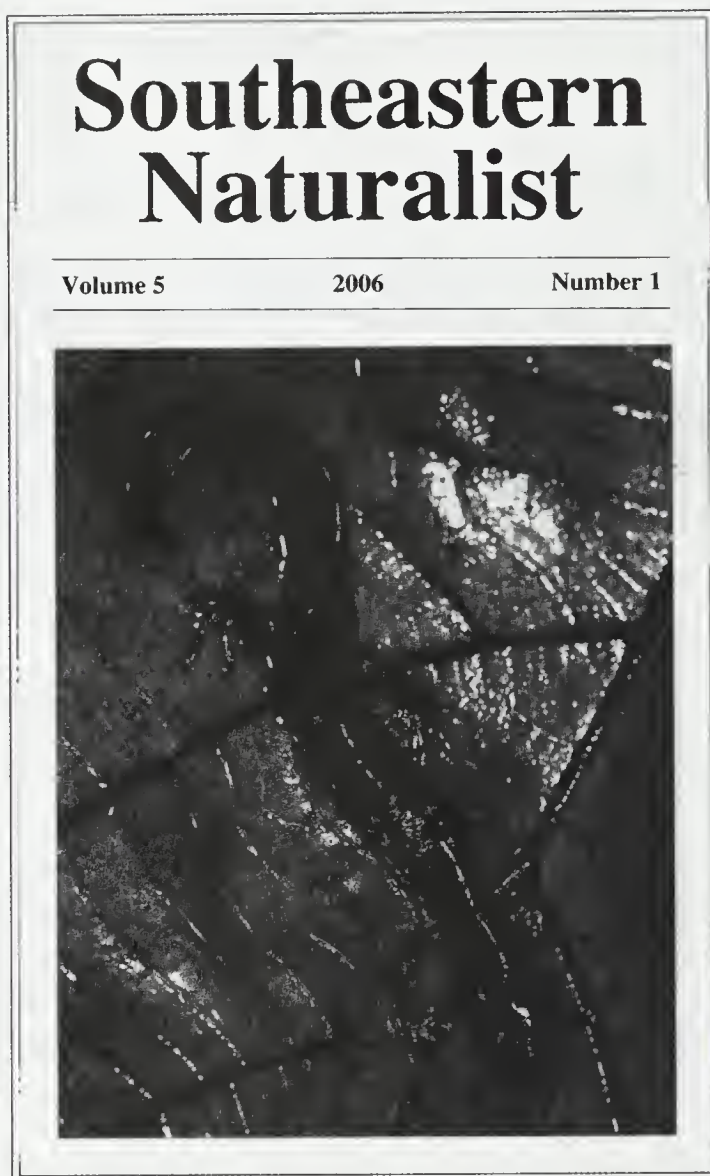
For selection criteria and more information, and to download application and nomination forms, please visit <http://www.aibs.org/diversity/>.

Abraham Parker  
Education and Outreach Program Associate  
American Institute of Biological Sciences  
1444 Eye St. NW, Suite 200  
Washington, DC 20005  
phone: 202-628-1500 x249  
fax: 202-628-1509  
[aparker@aibs.org](mailto:aparker@aibs.org)  
<http://www.aibs.org> <<http://www.aibs.org/>>



The *Southeastern Naturalist* . . .

- ◆ A quarterly peer-reviewed and edited interdisciplinary scientific journal with a regional focus on the southeastern United States (ISSN #1528-7092).
- ◆ Featuring research articles, notes, and research summaries on terrestrial, freshwater, and marine organisms, and their habitats.
- ◆ Focusing on field ecology, biology, behavior, biogeography, taxonomy, evolution, anatomy, physiology, geology, and related fields. Manuscripts on genetics, molecular biology, archaeology, anthropology, etc., are welcome, especially if they provide natural history insights that are of interest to field scientists. Symposium proceedings are occasionally published.
- ◆ Indexed in Biological Abstracts (BIOSIS), BIOSIS Previews, CAB Abstracts, Cambridge Scientific Abstracts, EBSCOhost, Environmental Knowledgebase (formerly Environmental Periodicals Bibliography), FISHLIT (Fish and Fisheries Worldwide; Aquatic Biology, Aquaculture, and Fisheries Resources), Wildlife Review Abstracts, and Zoological Record (BIOSIS UK). Arrangements for indexing in Elsevier BIOBASE (Current Awareness in Biological Sciences), and ISI Services (Science Citation Index-Expanded, ISI Alerting Service, and Current Contents/Agriculture, Biology, and Environmental Sciences) are pending.
- ◆ A sister journal of the *Northeastern Naturalist* (ISSN #1092-6194), published since 1997. Both journals are identical in focus, format, quality, and features. The journals together serve as a matched-pair of regional journals that provide an integrated publishing and research resource for the eastern part of North America.
- ◆ Printed by Allen Press, printer of many journals in the biological and environmental sciences, especially those whose parent organization is a member of the American Institute of Biological Sciences (AIBS).
- ◆ Available online in full-text version in the BioOne database ([www.bioone.org](http://www.bioone.org), a collaborative effort of Allen Press, AIBS, and other organizations) and the Proquest Information and Learning databases ([www.il.proquest.com](http://www.il.proquest.com)).
- ◆ For information, instructions for authors, and subscriptions: *Southeastern Naturalist*, PO Box 9, 59 Eagle Hill Road, Steuben, ME 04680-0009; 207-546-2821, FAX: 207-546-3042; <mailto:office@eaglehill.us>; <http://www.eaglehill.us/jsgeninf.html>. Online secure ordering of subscriptions is available!





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# Southeastern Naturalist

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Volume 5

2006

Number 1

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Printed on Recycled Paper

## Classified Ads for Northeastern and Southeastern Naturalist

Classified ads offering opportunities for people with career interests in the natural history sciences may now be placed in the *Southeastern* and/or *Northeastern Naturalists*, within the following categories.

- Faculty positions at colleges and universities
- Graduate student fellowships and assistantships
- Postdoctoral research opportunities
- Field biologist positions
- Requests for funding proposals
- Announcements of scientific meetings and conferences

Ads need to be received by February 20, May 20, August 20, and November 20, and must be placed over the web at <http://eaglehill.us/Merchant2/merchant.mv>. Journal issues mail about one month later. Rates are a modest \$.03/character, with a \$5 minimum. Space allocated to classified ads within the journal is limited. Ads will be reviewed prior to acceptance.



Lucrecia Herr (left) and Antoinette Frederick at the Cove Hardwood Forest, Great Smoky Mountains National Park.



## BOOK REVIEWS

Debbie Moore, *Review Editor*  
Department of Natural Sciences  
P. O. Box 8368, Troy University  
Dothan, AL 36304-8368

*Patterson, Gordon. 2004 The Mosquito Wars: A History of Mosquito Control in Florida.* University of Florida Press, FL. \$55.00. 263 p.

The World Health Organization (<http://www.who.int/en/>) reports that hundreds of millions of people worldwide are infected with mosquito-borne pathogens, including the causative agents of dengue, yellow fever, encephalitis, and malaria. Yet few of us living in the United States today have any experience with these diseases. This was not always the case. From the late 1600s through the late 1800s, for example, the major American cities of Philadelphia, Washington D.C., New York, Baltimore, New Orleans, and Jacksonville experienced epidemics of yellow fever. Gordon Patterson, a Florida Institute of Technology professor of History, has written a seminal work on the complex interactions of science and technology, society, politics, and economics in the battle against one of humankind's greatest enemies. Rich in detail and colorful anecdotes, *The Mosquito Wars* provides an in-depth examination into humankind's endeavors in dealing with a seemingly insurmountable problem facing the health and welfare and development of Florida, particularly in light of the state's permissive climate and nearly 2 million acres of wetlands.

Extensively researched and annotated with 25 pages of footnotes and a 24 page bibliography, the story of *The Mosquito Wars: A History of Mosquito Control in Florida* chronologically unfolds through 10 engaging chapters illustrated with 30 black and white photos and figures. Patterson's lucid writing is enhanced by his judicious use of anecdotes, including interviews and writings from the various scientists, physicians, local governmental officials, and other pioneers in the development of Florida's mosquito-control program. In addition, the book includes a thorough and detailed index and an appendix listing the major mosquito pest species and their vectored diseases.

A brief world history of the mosquito relative to its impact on humans is the subject of

Chapter 1 in which diverse sources are cited ranging from Herodotus, the Talmud, and Spenser's *Faire Queen* to Water Reed, Rachel Carson's *Silent Spring*, and Zora Neale Hurston. The early days of Florida's mosquito control efforts are detailed in Chapter 2 and include the accounts of the 1888 Jacksonville and the 1905 Pensacola yellow fever epidemics, the Herculean efforts of Joseph Y. Porter in establishing the Florida State Board of Health, and the early "fomite theory" on the origins in epidemic diseases. In Chapter 3 Patterson recounts the creation of the Florida Anti-Mosquito Association and the first major successes in the control of mosquito populations through such means as the application of suffocating surface oils, the introduction of the mosquito fish (*Gambusia affinis*), and the draining of breeding sites, accomplishments that



were especially remarkable in regions of the state where between 40% and 80% of the residents were infected with malaria.

Throughout the text, Patterson chronicles the trials and tribulations of Florida's pioneers in their political battles and public awareness campaigns to gain financial and community support for their programs. Chapter 4 describes the formation of Florida's 1<sup>st</sup> mosquito control district, the failed and ill-conceived use of bats for biological control, and the success of dynamite ditching to drain breeding sites. In subsequent chapters, Paterson relates the contributions of the Great Depression era Civilian Works Administration, the promise of DDT during the golden age of mosquito control in 1950s and the later revelation of its hazardous environmental impact, the creation of the Entomological Research Center, the passage of critical legislation to continue the expansion of education and control programs, the ongoing research into the natural history of mosquitoes and effective control measures, and the growing problem of insecticide resistance and the search for alternative strategies.

*The Mosquito Wars: A History of Mosquito Control in Florida* is a tribute to the scientists, technicians, and politicians who persevered in the daunting undertaking of significantly reducing the impact of these disease vectors. It is a fascinating read for students from all walks of life, from novice to expert.

ALAN F. SMITH, *Mercer University, Macon, Georgia.*



Wolfe, Jeremy M, Kluender, Keith R. Kluender, Dennis M. Levi, Linda M. Bartoshuk, Rachel S. Herz, Roberts L. Klatzky, and Susan J. Lederman. 2006. **Sensation & Perception**. Sinauer Assoc., Sunderland, MA. 407 p.

**Sensation & Perception** written by Wolfe et al. provides a thorough account of the sensory systems including vision, hearing, touch, olfaction, and taste. In addition to providing clear descriptions of the anatomy and mechanisms for each of the senses, the text delves into more complex topics such as motion perception, and psychoacoustics. The textbook is well-organized and outlines the chapter contents on the first page of each chapter, a feature which I find helpful in organizing my thoughts before plunging into the material. The media and supplements provided for this text are well-done and definitely added to my experience with the text. In fact, I recommend reading the textbook in front of a computer.

The chapter organization is logical and provided many avenues to learn the material. I appreciate the thought that went into writing and constructing the chapters to appeal to different learning styles. The writing is straightforward and clear, but still interesting. The illustrations are well-placed and appropriate for the material. Vocabulary words are not only highlighted in the text, but they are also listed in the margins for easy access. Within the text of each subheading, references direct the reader to web resources which are divided into activities, essays, and study aides. Each chapter ends with summary points and a reminder to refer to the website for activities, essays, study questions, and other study aides.

One of my favorite chapters was Chapter 2: The First Steps in Vision. This chapter began with an overview of the visual system anatomy and the properties of light. Both web-linked activities – *Visual System Overview* and *From Sun to Eye* were easy to follow, but reinforced the text. At first I thought these activities were beneath the knowledge base of the presumed reader, but I soon found that the activities built upon each other and got progressively more challenging. The web-linked essays in this chapter were great additions, complete with illustrations. The essay, *Accommodation, Presbyopia, and Cataracts*, was a nice follow-up to the basic information about the lens found in the textbook. At the end of each activity, there was the opportunity to take a quiz to test your short-term memory and reinforce the information. In addition to these short quizzes, the study questions and additional aides helped me fully process the information.

While my doctorate is in the field of neurobiology, my expertise is in motor neuron development, not sensory systems. However, after reading the entire textbook I am impressed by the knowledge and understanding I gained in this area of neurobiology. The writing is clear so that someone with only an introductory background in biology could follow it, but the essays found on-line add additional depth and challenge for the experienced biologist. Granted most students will not want to rely solely on themselves to learn about the sensory systems and perception, but it is conceivable that they could. After reading the textbook and engaging in each of the on-line activities, any reasonably intelligent person should be able to explain the summary points at each chapter.

This book would be an excellent choice for a sensory neurobiology course or could be used in a general neurobiology course with a second textbook to cover the motor systems. It would also be an excellent choice to supplement a physiology or human biology course.

VICTORIA TURGEON. *Biology Department, Furman University, Greenville, SC 29613.*✉



Antoinette Frederick (left) and Marilyn Caponetti at the Carlos Campbell Overlook, Great Smoky Mountains National Park.

## NEWS OF BIOLOGY IN THE SOUTHEAST

Ricky Fiorillo—News Editor  
Department of Biology  
University of Louisiana at Monroe  
Monroe, LA 71209

### ABOUT PEOPLE AND PLACES

#### LOUISIANA

Dr. Ricky Fiorillo has accepted a position as an Associate Professor of Biology at the University of Louisiana at Monroe. His research interests include amphibian ecology/conservation and ecological parasitology.

#### TENNESSEE

Dr. Gordon M. Burghardt, Alumni Distinguished Service Professor of Psychology and Ecology and Evolutionary Biology, and University Macebearer for 2005-2006, University of Tennessee, Knoxville, has been invited to give a plenary address at the Croatian Biological Congress in Croatia in September, 2006.



### THE NEON PROJECT

#### Progress Report

The following is the most recent and significant developments related to the design process for the National Ecological Observatory Network.

First, the latest versions of the project's design documents—the NEON Integrated Science and Education Plan and the NEON Networking and Informatics Baseline Design—are now available at <http://www.neoninc.org/>. If you have ideas or suggestions related to the NEON reports, feel free to send those to the NEON Project Office via the online comment form.

Second, the National Science Foundation has released its FY 2007 Budget Request, including funding for initiatives under Major Research Equipment and Facilities Construction. Click on the link below to review the entire NSF FY 2007 MREFC budget request, with details of NEON funding included on pages 269-274. <http://nsf.gov/about/budget/fy2007/pdf/6-MREFC/32-FY2007.pdf>.

For further information or to comment, contact:

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NEON Project Office, AIBS  
1444 I St. NW, Suite 200  
Washington, DC 20005  
202/628-1500 x215; fax: 202/628-1509  
[djohnson@aibs.org](mailto:djohnson@aibs.org); [www.neoninc.org](http://www.neoninc.org)





## *Obituaries*

### **Robert Hamilton Martin, 1916-2006.**

Our association lost a devoted member with the passing of Robert Hamilton Martin in Easley, South Carolina, on April 3, 2006. I first met Bob Martin in September, 1959 shortly after I joined the University of South Carolina. James Penney, chair of my department, and incidentally one of the founders and seventh president of ASB, agreed to provide me with a fine microscope. My friend and mentor at USC, Wade Batson, introduced me to Mr. Bob Martin who in turn introduced me to a Wild Heerbrugg M-20 microscope. The thoroughness of Bob's presentation was a habit of his, and he spent a whole morning and most of the afternoon showing me the wonders of this instrument which carried the capacity for both bright-field and phase contrast microscopy, a feature rare among microscopes of that time. Of course he wanted me to select his microscope, but his greatest concern was that I would clearly understand its operation and its full potential for my specific research. I still have and use that microscope, and Bob has helped me upgrade its features through the years, always with my best interest at the forefront. His passion for microscopy and his keen desire to advance the science by properly equipping investigators set a tone in the operation of his company elsewhere seldom found. He clearly understood that good service with good products map out the only noble route to a successful business.

Bob was born in Easley, South Carolina, in 1916 to James Rosamond and Mary Hamilton Martin. He was a graduate of Easley High School and a 1937 graduate of Clemson College, where he earned a Bachelor of Science degree. He served in the U.S. Army, stationed in Cairo, Egypt, during World War II, where he was in charge of optical ordnance facilities in Cairo, Tel Aviv, and Basra, Iraq. Bob was also an accomplished marksman during this period of his life and won several national competitions. He eventually retired from the Army Reserve, having attained the rank of Lt. Colonel.

Returning to Easley in 1946, Bob started his own business, Martin Scientific Instrument Company, now Martin Microscope Company. This year marked the 60th anniversary of the company, and he continued to work in the business until his death. Bob was active in various professional societies, including the Appalachian Regional Microscopy Society, the Georgia Microscopical Society, the Royal Microscopical Society, and the Association of Southeastern Biologists. Bob Martin was a patron member of ASB and a perennial exhibitor at the annual meeting. For many years, Martin Microscope Company has supported the ASB Student Research Award, and the company has not missed an ASB annual meeting at least since 1960. Microscopists in the Southeast and beyond will greatly miss Bob for his ability to focus on their needs and concerns, his honesty, his professional advice, and above all for his engaging personality and kindly spirit.

—John M. Herr, Jr., Department of Biological Sciences, University of South Carolina, Columbia, SC 29208



Robert Hamilton Martin

**WILLIAM L. MENGEBIER, 1921-2006**

The Rev. Dr. William L. Mengebier, 84, a former head of James Madison University's biology department, died Tuesday, March 21, 2006, at the home of his daughter in Bridgewater.

In 1954, Mengebier was appointed head of the biology department and taught at James Madison University until 1968 when he moved to Bridgewater College to serve as department chairman until 1982. He retired from teaching in 1987.

The Association of Southeastern Biologists awarded him its Meritorious Teaching Award in 1968 and he was elected a Fellow of the Virginia Academy of Science in 1978. Bridgewater College presented to him its Distinguished Service Award in 1990.

In 1967, Mengebier was ordained a deacon in the Episcopal Church and in 1968 was ordained to the priesthood. He served as vicar of the Good Shepherd of the Hills Episcopal Church in Boonesville for 13 years and was curate and interim rector of Emmanuel Church in Harrisonburg from 1970 until his retirement in 1989.

He served as the examining chaplain of the Diocese of Virginia and was appointed to two terms on the Diocesan Commission of Ministry. From 1990 to 1995 he served as staff chaplain to the Rockingham Memorial Hospital Hospice.

Mengebier was born December 2, 1921, in New York City and was the son of the late William E. and Frieda Becker Mengebier. He received his B.S. from The Citadel, an M.S. from Oberlin College and his Ph.D. from the University of Tennessee.

During World War II, he served with the 104<sup>th</sup> Infantry Division in Europe and was awarded the Silver Star and Bronze Star with cluster. He was retired from the Medical Service Corps of the U.S. Naval Reserve.

In 1945, Mengebier married the former Clelia Matthew of Charleston, South Carolina, who predeceased him in 2001. He is survived by three daughters, Margaret Kyger (an assistant professor of special education at James Madison University) and her husband, Bill, of Bridgewater, Clelia LaMonica and her husband, Jack, of Marshall, and Nancy Mengebier and her partner, Susan, of Merced, California; one brother, Robert A. Mengebier, M.D., of Green Valley, Arizona; and four grandchildren, Clelia Rose and John LaMonica, Katie Kyger Frazier and Meg Kyger.

--Connolly McMullen, Department of Biology, James Madison University, Harrisonburg, Virginia.



## TriBeta Abstracts

Presentations at the Forty-Ninth Annual Meeting held with the Association of Southeastern Biologists, March 29–April 1, 2006, Gatlinburg, Tennessee

### Paper Presentations Southeastern District I

Ramsey, Jessica, and Thomas Hurst. Salem College, Beta Alpha and NOAA/NMFS/AFSC. Light Affects the Visual Foraging Ability of Northern Rock Sole.

Northern rock sole, a demersal Alaskan flatfish, use visual foraging to locate prey. Foraging abilities were tested at 7 different light levels varying by order of magnitude from dim daylight ( $10^{-1}$   $\mu\text{mol photon m}^{-2} \text{s}^{-1}$ ) to total darkness ( $10^{-8}$   $\mu\text{mol photon m}^{-2} \text{s}^{-1}$ ) using two different prey, live *Artemia* and frozen krill. The rock sole were able to forage effectively at the higher light levels; foraging was ineffective at the lower light levels. The ability to successfully capture prey declined between  $10^{-4}$  and  $10^{-6}$   $\mu\text{mol photon m}^{-2} \text{s}^{-1}$ , showing a threshold visual ability below which the fish could not see. Trials with frozen krill demonstrated that the rock sole use visual foraging as the primary sensory modality for locating prey.

McMahan, Caleb D. Sigma Gamma, Erskine College. Relocation as a Potential Conservation Strategy for the Eastern Box Turtle, *Terrapene c. carolina*, in a Fragmented Environment.

In South Carolina there is a growing concern for the status of the Eastern box turtle, *Terrapene c. carolina*. Although box turtles remain plentiful in rural areas, they are under threat where development and habitat destruction are more common. As natural habitat is shifted to 'developed' status the steady decline of these turtles is leading to the development of strategies to reverse this trend. To determine if relocation can serve as a conservation strategy for this species, we have investigated the relocation of 15 box turtles to a protected woodland area (100 acres) located in Abbeville County. We tracked these relocated turtles using radiotelemetry and GPS in order to assess the short-term health, activities and movement patterns of these box turtles during one active season in 2005. Turtles showed patterns of weight gain that were consistent with a reasonable ability to find sufficient food. The mean total distance these turtles moved was 2904m, while burying down to hibernate an average 295m from the release site. These data suggest that these box turtles, after an initial "flight" from the release site, settled into an area of land that could support them, and we predict that they will survive.

Jefferson, Julie. Sigma Gamma, Erskine College. An Exploration of the Effects Cytokine Tumor Necrosis Factor Alpha Has on Cardiac Fibroblast Behavior as it Pertains to Left Ventricular Remodeling.

It is thought that the cytokine Tumor Necrosis Factor Alpha (TNF- $\alpha$ ) causes either an afibrotic or fibrotic response in the heart myocardium by regulating cardiac fibroblast extracellular matrix metabolism, and that the response may vary with factors such as age, the concentration of TNF- $\alpha$ , and the exposure time of the cardiac fibroblasts to TNF- $\alpha$ . In order to study the effects of TNF- $\alpha$  on cardiac fibroblast extracellular matrix metabolism, adult and neonatal cardiac fibroblast samples were extracted from Sprague-Dawley rats. The adult sample set was treated with 50.00 ng/ml of TNF- $\alpha$  for 0 h, 3 h, 6 h, and 24 h. The neonatal sample set was treated with variable amounts of TNF- $\alpha$  (0 ng/ml, 0.50 ng/ml, 5.00 ng/ml, and 50.00 ng/ml) for 24 hours. Both sets of samples were assessed via BCA protein assays followed by western blotting for levels of various proteins. In both sample sets, analysis of the protein levels of  $\alpha$ 1 integrin indicated that tissue remodeling might have occurred. Analysis of the protein levels of smooth muscle actin alpha, collagen I, and collagen III indicated that an afibrotic response might have occurred in the adult sample set whereas, a fibrotic response might have occurred in the neonatal sample set.

Wozny, Sara & Leonard Sutton. Tau Gamma, East Carolina University. "Bovine Serum Albumin and Other Proteins in Caco-2 Intestinal Cell Transport Models" in Greenville, NC.

Epithelial cells line certain tracks of the body and serve as a border allowing the absorption of certain molecules, such as proteins. Colonic adenocarcinoma 2 (Caco-2) cells possess many of the properties of the small intestine and therefore are used as a model of human intestinal epithelial cells. Scientific experiments were conducted to determine the passage of Bovine Serum Albumin, BSA, and other proteins, such as Beta-lactoglobulin, across Caco-2 cells. The cells were grown in 75 cm<sup>3</sup> flasks with Fetal Bovine Serum, Dulbecco's Modified Eagle Medium, and Penicillin Streptomycin and placed in an incubator at 5.0 % CO<sub>2</sub> and 37 °C. The cells were placed in a transwell apparatus to establish apical and basolateral borders. The proteins were applied to the apical side of the cells and then their passage was followed through the cell's basolateral side using fluorescence. It was determined that the size of the protein and competition aspects influenced the rate of passage in the Caco-2 cells.

\* Breckheimer, Ian K. Sigma Phi, Guilford College. The invasive vine Akebia (*Akebia quinata*) at Guilford College: niche, impact, and potential for further spread.

*Akebia* (*Akebia quinata*) is a twining woody vine and groundcover native to East Asia that has become invasive in parts of the Eastern US. Very little was previously known about its ecology in an invasive setting. A study was undertaken at Guilford College to ascertain the vine's ecological niche, quantify its impact on native vegetation, and assess whether or not it has the potential to spread into a section of the campus that is "virgin" forest. Thirty-seven random sampling plots were established within *Akebia*'s distribution and 10 within the boundaries of "virgin" forest. A variety of data were taken at each sample plot, including percent canopy cover, percent *Akebia* ground cover, the number of native woody stems, soil pH, and several soil nutrient indices. The data showed a



significant negative correlation between Akebia percent cover and the number of native woody stems, and demonstrated that Akebia is able to thrive in a wide variety of physical conditions. The "virgin" forest parcel fell within the niche of Akebia for all measured variables, suggesting it may threaten this area of high conservation value. Akebia may be a greater invasive threat in North Carolina than was previously suspected.

Duran, Charity G. Tau Xi, Meredith College. Kv3.2 High Throughput Assay Development.

Ion channels are pores that span the lipid bilayer of the cell membrane, allowing ions to diffuse across the membrane. They have numerous physiological roles, including generating and orchestrating electrical signals in the brain, heart, and muscle. In nature, ion channels are modulated by a variety of physiological signals. Modulation of Kv3.2, a voltage gated potassium channel, alters the maximal firing frequency of interneurons; therefore, it is associated with certain neurological diseases. Thus, identification of compounds that modulate Kv3.2 is important for drug development. Using a FLIPR (fluorometric imaging plate reader), high throughput screening assays can be developed to find ion channel modulators. In order to study Kv3.2 modulation, CHO cells overexpressing Kv3.2 were plated on 384 well plates and stained with FMP (FLIPR membrane potential) dye in order to monitor changes in membrane potential. Depolarization (a positive change in membrane potential) indicate that the channels are open. By altering extracellular conditions, such as concentration and compound added, a blocker assay was developed. Two blockers were identified for Kv3.2: TEA and Fluoxetine. Assays such as these aid in the development of novel compounds for drugs that specifically target ion channels.

Brown, Brandon D. and April M. Clayton. Sigma Gamma, Erskine College. Potential Protein-Protein Interactions Involved in Cytoskeletal Rearrangements and Adhesion in *Dictyostelium* Development.

When stressed *Dictyostelium discoideum* aggregate together and exhibit an alteration in actin cytoskeleton arrangement. The goal of this project was to determine what roles the Rab8-like G-proteins Sas1 and Sas2 play in adhesion and cytoskeletal rearrangement. Overexpression of Sas1 causes a decrease in adhesion strength and an increase in projection formation. The opposite effects are observed when Sas2 is overexpressed. It has been proposed that interaction of active Sas1 (Sas1-GTP) with the germinal center kinase (GCK) allows for phosphorylation of severin, a protein that instigates actin rearrangement. The yeast dihybrid system was used to determine if Sas1 or Sas2 interacts with MKK4, the human version of germinal center kinase. A DNA fragment containing the coding sequence for amino acids 433-819 of MKK4 was placed in pGADT7 and the coding regions of various *sas1* and *sas2* alleles (wildtype, constitutively active, or dominantly negative) were placed in pGBKT7. Following mating of yeast strains expressing Sas1 or Sas2 proteins with a MKK4 containing yeast strain, protein-protein interaction assays were performed. The C-terminal fragment of MKK4 did not interact with any of the Sas1 or Sas2 proteins. Further research will be conducted to determine if Sas1 or Sas2 interacts with the full-length MKK4 protein.



Baker, Bethany J. Beta Eta, Florida Southern College. A comparison of benthic macroinvertebrate biodiversity before and after an alum treatment and development of a wetland filtration system on a central Florida cultural eutrophic lake.

For a four-week period from 11 February to 15 March, 2006, twelve Hester-Dendy macroinvertebrate samplers were placed in Lake Hollingsworth, a Central Florida lake, adjacent to a recently constructed artificial wetland. The wetland was designed to function as a filtering system for storm water running into the lake after rain events. The purpose of this study was to determine if the species diversity of macroinvertebrates, based on substrate spacing, had been affected by the 2005 construction of the artificial wetland (Southern Landing), and/or a recent alum treatment on Lake Hollingsworth. The macroinvertebrate data were collected using an identical method for an experiment completed in the spring of 2003 prior to the alum treatment, thus allowing for a temporal comparison in macroinvertebrate species diversity. Lake Hollingsworth is a cultural eutrophic sinkhole lake located in Lakeland, Florida. The water source for the lake consists mainly of storm water runoff supplied by 57 storm drains. The city of Lakeland has invested millions of dollars in an effort to improve the water quality of Lake Hollingsworth through dredging, drawdowns and chemical treatments. Using macroinvertebrate diversities as indicators, a change in water quality was measured through species diversity comparisons. This comparison of diversity before and after these treatments allowed for evaluation of the effectiveness of attempts to improve water quality in Lake Hollingsworth.

Manchester, Steven J. Beta Eta, Florida Southern College. Water chemistry on an artificial wetland in Central Florida.

Lake Hollingsworth is a culturally eutrophic Central Florida lake and is the recreational center for all of Lakeland, Florida. A survey performed in 1992, found that 2,000 people a day used the perimeter of the lake for recreation, predominately walking. This survey was conducted by the students of Florida Southern College in an effort to convince the Lakeland city officials that the lake needed to be preserved. Due to excessive sedimentation and pollution, the lake was dredged in 2001. In order to mitigate the pollution, point sources were located. Once these storm drains were identified, an artificial wetland was constructed in 2004 to intercept and naturally filter the storm drain runoff into the lake. Southern Landing, also known as Anchor Park is a 0.57 hectare storm water reservoir which was designed to filter the water before it reaches Lake Hollingsworth. As part of a joint research project and effort of many we were able to analyze the effectiveness of this newly developed artificial wetland and also determine the effects it has on the water quality of Lake Hollingsworth. In this portion of the research water chemistry on Southern Landing wetlands as well as Lake Hollingsworth was analyzed. Chemical analysis was performed for dissolved oxygen, nitrates, nitrites, phosphorus, pH and turbidity.

Perkins, Amy E. Sigma Psi, Florida Institute of Technology. Determination of nursery habitats used by *Centropomus undecimalis* (snook) as determined by otolith microchemistry.

Fish otoliths (ear bones) may incorporate elemental signatures that reflect the water chemistry of the environment utilized during different life stages of the fish. Microchemistry patterns of otoliths have been used in several studies to determine the linkages among populations of fish from varying nursery and reef habitats. I am testing the hypothesis that snook from geographically distinct nursery habitats incorporate different elemental signatures in their otoliths. These snook support one of the most valuable recreational fisheries in Florida, and determination of their most important nursery habitats will help focus conservation efforts to maintain the population. Otoliths were collected from juvenile snook in two geographically distinct locations in Florida: Vero Beach Mosquito Impoundment and Indian River Lagoon, Crane Creek. Samples were collected between 8 months to examine potential variation within sites. Otoliths were removed using non-metal instruments to reduce trace metal residues and will be analyzed using graphite furnace atomic absorption spectroscopy. Results are pending; if the basic hypothesis is accepted, fishery biologists will have a powerful tool to identify the nursery habitats that produce individual fish.

**\* Frank G. Brooks Paper Award winner Southeastern District I**

### **Paper Presentations Southeastern District II**

Brown, Christina L., Sohaila Boehm Ibrahim Arram, Gislaine Custódio C. Piovezan, Sérgio Túlio Stinghen, Ednéia P. Machado, Guilherme Augusto Parise and Bonald C. Figueiredo. Mu Tau, Christian Brothers University and Center for Molecular Genetics and Cancer Research in Children, Federal University of Paraná. Genotyping for TP53 R337H in southern Brazil where it is responsible for almost all cases of childhood adrenocortical carcinoma.

Adrenocortical tumors (ACT) are very rare in children, yet occur in a higher incidence in several states of Southern Brazil. This study was proposed to evaluate the specificity and sensitivity of a genotyping method to screen the germ line TP53 R337H allele in small amounts of blood samples. This study was performed in a state from southern Brazil (Parana), where this mutation is associated with almost all the ACT cases in children, and where childhood ACT incidence is 12 to 18 times higher than USA and France. A PCR/restriction enzyme based test was used to test blood samples collected in FTA membrane from 20 individuals (19 adults exhibiting the wild-type p53 gene and one child with ACT the TP53 R337H allele previously confirmed by DNA sequencing analysis). Using only 2 punches (circles of 2mm diameter) of blood-embedded FTA membrane per PCR assay, samples were tested after signing a written consent form. All 20 samples were re-tested four to seven times using the same protocol and revealed the same results, only the child with ACT presented the R337H mutation. Additional series of experiments were performed replacing chemicals, enzymes, and membranes from 3 other manufactures. All control samples were negative as expected and the positive mutation was also



confirmed using one of the protocols, indicating that this protocol is recommended to be used in newborn tests to be initiated in 2005 in Paraná. This test will allow doctors to screen the children with the mutation and in turn allow for the early diagnosis of ACT needed for a positive long-term prognosis for these children through medical, hormonal, and imaging exams.

Supported by MHIRT grant (NIH 5T37TW000123-03).

Paxson, J.M., M.R.F. Marques, D.B.B. Trivella and G.S. Toledo. Mu Tau, Christian Brothers University and Dept. of Biochemistry, UFSC, Florianopolis, Brazil. Effects of Cadmium Exposure on the GST activity and HSP-70 levels in the gills of the mangrove oyster *Crassostrea rhizophorae*.

Heat-Shock Protein-70 (HSP-70) and Glutathione-S-Transferase (GST) are among the biomarkers associated with the exposure to xenobiotics. These proteins are generally used to help evaluate the toxic effects substances have on both the organism and the aqueous environment it inhabits. In the present work, we report the levels of HSP-70 and the activity of total GST and GST  $\pi$  in the gills of the oyster *Crassostrea rhizophorae* after being exposed to different concentrations of Cadmium (Cd). Enzymatic GST activity assays using both 1-chloro-2-nitrobenzene (CDNB) and Ethacrynic acid (ETA) as substrates as well as Western blot analysis with antihuman HSP70Ab were performed to evaluate the response involving these two proteins. In the experiment, adult oysters were collected and then separated into control and Cd-exposed groups. Within the Cd exposed group, the organisms were further separated into three groups in which each was exposed to 100 micrograms/liter of Cd for two days or 200 micrograms/liter of Cd for two or seven days. In general, the level of GST activity was greater in the exposed organisms compared to the controls, but not statistically significant. The level of HSP-70 was found to be increased in the groups of organisms exposed to Cd for two days in both concentrations (100 micrograms/liter for 2 days and 200 micrograms/liter for 2 days). However, in the group of organisms exposed for seven days, the level of HSP-70 returned to similar levels as in the control organisms. Even though the data collected showed an increase of HSP-70 in both of the two day Cd exposed groups compared to the control groups, it was not statistically significant. Studies are under progress to further characterize the threshold of these biomarker responses upon heavy metal exposure as well as GST isoforms in this mollusk species.

Wegford, Kimberly D. Mu Chi, Midway College. Acceptability of Hemp Seed Meal by the Equine of Midway College.

Hemp can be used in the production of many products, including human and animal feed. It is believed that if the United States were to join the world market in producing hemp, Kentucky would be an almost ideal place in which to grow it. Research on hemp as a feed source has already been conducted using livestock and several different types of fish, including channel catfish. Hemp has shown potential to be a non-traditional feed source for the equine industry, mostly due to the fact that the protein content of hemp is similar to that of soybean meal. This



research project was designed as a cafeteria-style preference trial. The hemp seed meal was preferred by a total of 25% of the horses and the soybean meal was preferred by the remaining 75% of the horses. It has been suggested that another trial could be performed in which only the hemp seed meal is offered to the horses, eliminating the choice of feed and forcing them to decide if the hemp seed meal feed is palatable.

\* Johnson, Lakesha. Eta Mu, Southern University, Baton Rouge. How the Brain Locates a Sound in Space. Michael Anderson, PhD (Mentor) Johns Hopkins University School of Medicine.

Head related transfer functions (HRTFs) capture the directional dependence of sound propagation through the external ear, which encompasses spectral sound localization cues. We hypothesized there are physiologically defined response types in the central nucleus of the inferior colliculus (IC) and physiologically defined response types show spatially directional selectivity. Cats were anesthetized with xylazine and ketamine followed by tracheotomy and decerebration procedures. Single-unit activity was recorded with platinum-iridium microelectrodes and measured to a range of frequencies at various dB levels. HRTF stimuli were then presented to the contralateral ear to measure single-unit sensitivity to sound locations. We concluded that three physiologically defined unit types in the central nucleus of the IC exist: V, I, and O. Type V units exhibit excitation (activity above spontaneous activity) at all dB levels. Type I units exhibit a narrowly tuned I-shaped excitatory region with wide areas of lateral inhibition (activity below spontaneous activity). Type O units display an O-shaped island of excitation at low dB levels, restricted by inhibition at higher levels. We believe that O units are possibly responsible for encoding directional cues. This research is fundamental to new developments and advancements in auditory technology for those with hearing impairments.

Funded by grant number RO1DC00954.

Hendrick, J. M., S. C. Kaste, R. F. Tamburro, F. A. Hoffer, M. Onciu, J. T. Sandlund, R. C. Ribeiro, J.C. Chandler , and S. C. Howard. Mu Tau, Christian Brothers University and Departments of Radiological Sciences, Hematology-Oncology, Division of Critical Care St. Jude Children's Research Hospital, the Department of Radiology and University of Tennessee School of Health Sciences. Abdominal Compartment Syndrome in a Newly Diagnosed Patient with Burkitt's Lymphoma.

Burkitt's lymphoma is a rare form of non-Hodgkin's lymphoma that predominately affects young children. Abdominal compartment syndrome (ACS) is caused by an increase in the intra-abdominal pressure which can lead to intra-abdominal hypertension. Both Burkitt's lymphoma and ACS can decrease renal perfusion to an extent where chemotherapy cannot be optimally delivered. Burkitt's lymphoma and ACS have not been reported together. We present the radiological aspects of ACS associated with Burkitt's lymphoma at diagnosis. We performed a retrospective chart review of one male patient with Burkitt's lymphoma and ACS. The day after the patient was admitted to our institution his clinical condition declined. A therapeutic paracentesis was performed to decrease his intra-

abdominal pressure. His clinical condition subsequently improved considerably. Upon radiological recognition of ACS, the possibility of paracentesis to decrease intra-abdominal pressure should be considered to allow optimal delivery of chemotherapy.

Supported in part by grants P30 CA-21765 and P01 CA-20180 from the National Institutes of Health, and by the American Lebanese Syrian Associated Charities (ALSAC).

Sharma, Karan and John R. Hisey. Psi Omega, Lee University, Cleveland, Tennessee. Variation in opossum litter size in southwestern Tennessee.

Individual fitness is related to number of offspring produced, which may be influenced by energy balance relating to the mother's body size, intra- and interspecific competition and environmental factors that vary over space and time. We tested hypotheses on these relationships in *Didelphis virginiana*, a key mesopredator in which litter size is easily assessed, by operating two trapping grids near Memphis, Tennessee over three summers (12,000 trap-nights). Forty six female opossums with mean mass of 2.20 kg and mean snout-rump length of 479.6 mm were captured with pouch young. Mean number of young per litter was 8.8 (range 3–13). No significant relationships were found between number of pouch young per litter and trap grid, year, the mother's mass or length, or predator numbers on a grid. Wide variation in number of young may indicate, however, that differences in genetics, health, or other factors affecting individual females influenced litter size.

Gook, Tiffany J. Mu Chi, Midway College. *Cryptosporidium* spp. in the domestic horse population of central Kentucky.

Fecal specimens of 25 healthy domestic horses were collected in the central Kentucky area. After being preserved in 10% formalin, the specimens were concentrated by the formalin-ethyl acetate procedure. The Merifluor *Cryptosporidium/Giardia* Direct Immunofluorescent Detection Procedure was used to stain the specimens. The results showed the age range affected was between 1-9 years. Of these 25 specimens, 3 tested positive for *Cryptosporidium* spp. Breed and gender did not appear to affect the prevalence of oocysts found in the fecal specimens.

Witt, Rachel L. Mu Chi, Midway College. Factors influencing the selling price of 2005 Thoroughbred Yearlings at Central Kentucky public auctions: A Clinical Study of 95 horses.

This study assessed factors that influenced selling price of thoroughbred yearlings at Kentucky summer sales at public auction. The factors that were considered in this study-included dam's pedigree, surgery record, sex, stud fee, and significant findings on radiograph (RAD) reports. These were all compared to selling price or reserve not attained (R.N.A.) price results. The 95 yearlings were examined by veterinarians from Woodford Veterinary Clinic-Equine (WVC) and



were catalogued in either the Fasig-Tipton July KY Summer yearling sale or the Keeneland September yearling sale. Horses in this study were patients at WVC since birth and had arthroscopic surgery records. Surgery letters and sales RAD reports were obtained on all horses. The dams' pedigrees were evaluated on 4 different factors including black type, stakes producing mare, stakes producing family, and stakes winning family. Stud fees of the yearlings' sires were obtained from the Blood Horse 2005 Stallion Register. It appears that the non-surgery horses sold for a higher price than the surgery horses. The mean average selling price of horses with no significant findings on RAD reports was higher than of horses that did have significant findings. The mean selling price tended to increase as stud fee range increased and as the number of factors in the dam's pedigree analysis increased. Gender did not seem to affect the mean selling price of yearlings.

Falcone, Joseph, and Phillip Musich. Pi Delta, East Tennessee State University. Cellular Chemoprotective Effects of Flavone, the Simplest Dietary Flavonoid.

A healthy diet can reduce the risk for certain cancers. Could phytochemicals which normally protect plants against UV radiation also protect non-plant organisms, especially humans? Oxidative and UV damage can cause DNA nicks (breaks) and base modifications, and/or cross-linking between adjacent thymine bases, respectively. This damage may cause mutations (a pro-mutagenic effect). Flavonoids are found in fruits and vegetables, and also in chocolate, wine and tea. This study measured the ability of flavone, the simplest flavonoid, to protect DNA against oxidant and UV-induced mutations using multiple assay systems.

**\* Frank G. Brooks Paper Award winner Southeastern District II**

### **Paper Presentations Southeastern District I & II**

Spahlinger, Greg W. Sigma Phi, Guilford College. Structural Analysis of 17 $\alpha$ -Ethinylestradiol Adducted Cytochrome p450 2B Enzymes.

Active CYP 2B6 and 2B1 enzymes were reconstituted with NADPH-Reductase, and incubated with 17-  $\alpha$  Ethinylestradiol in the presence or absence of NADPH and assayed again for activity remaining. Inactivated P450 enzymes were then isolated from the reaction mixture for structural analysis by ESI-LC-MS and LC-MS/MS. Techniques of isolation included SDS-PAGE separation followed by electroblotting, or Ni<sup>++</sup> affinity chromatography. The resulting CYP enzymes were digested with Trypsin, or *S. aureus* Glu-C and the resulting peptides were analyzed using ESI-LC-MS/MS techniques. The sequences for several CYP 2B peptides were positively identified; the CYP 2B 17-  $\alpha$  Ethinylestradiol adducted peptides, and the sites of adduction by 17-  $\alpha$  Ethinylestradiol were later determined by Drs. Ute M. Kent and Paul F. Hollenberg.

\* Caron, Lena D., Sigma Pi, Guilford College and Harvard Institutes of Medicine. RNA interference in human vascular cells achieved via rapid pressure transfection with silencing RNA.



Intimal hyperplasia (IH) is the disease process of blood vessel thickening that occurs after injury, and has deleterious effects in vein bypass grafts used in coronary and peripheral artery bypass operations. Current hypotheses suggest that prevention of the disease could be accomplished through the targeted suppression of the abnormally expressed MARCKS gene. Optimum prevention of IH would be accomplished by means of a rapid intra-operative treatment of the vein graft to block the subsequent up-regulation of MARCKS, thereby preventing the onset of disease. In this study, we sought to determine if gene silencing (via siRNA) can be achieved in human vascular cells within the timeframe and conditions of surgical application. Human endothelial and vascular smooth muscles cells cultured *in vitro* were rapidly transfected with siRNA in a pressure chamber; control cells remained at ambient pressure. mRNA levels analyzed via qRT-PCR suggest that pressure is an effective method of rapidly transfecting endothelial and smooth muscle cells with siRNA resulting in therapeutic MARCKS mRNA knockdown.

Kochenour, Nicholas & Leonard Sutton. Tau Gamma, East Carolina University. Transepithelial transport of IgG Through caco-2 intestinal cells.

Protein passage through the epithelial cells of the intestines was modeled with the Caco-2 cells due to the ability to mimic the absorption and passage of proteins and other molecules in the intestines, in particular the jejunum. Colonic adenocarcinoma 2 (Caco-2) cells possess many of the properties of the small intestine and therefore are used as a model of human INTESTINAL epithelial cells. Scientific experiments were conducted to determine the passage of IgG (Immunoglobulin G), as well as other proteins such as Ferritin across Caco-2 cells. The cells were grown in 75 cm<sup>2</sup> flasks with Fetal Bovine Serum, Dulbecco's Modified Eagle Medium, and Penicillium Streptomycin and placed in an incubator at 5.0% CO<sub>2</sub> and 37°C. The cells were placed in a transwell apparatus so as to establish apical and basolateral borders. The proteins were applied to the apical side of the cells and then their passage was followed through the cell's basolateral side using fluorescence. It was determined that the size of the protein and competition aspects influenced rate of passage in the Caco-2 cell.

Hinkle, Heather L. Rho Pi, Brevard College. The effectiveness of benzoyl peroxide in inhibiting the development of drug resistance in *Propionibacterium acnes*.

*Propionibacterium acnes* is the most common bacterial species found to cause acne vulgaris (pimples). It is an anaerobic bacterium commonly residing in the pilosebaceous glands located in the skin. When the skin produces an excessive amount of oil, *P. acnes* releases lipases to digest the surplus. A pustule (whitehead) will form on the surface of skin when the combination of digestive products (fatty acids) and bacterial antigens stimulates a severe inflammation that ruptures the hair follicle. A variety of topical antibiotics are used to treat acne vulgaris; however, development of drug resistance in bacteria has become a problem. *P. acnes* can become resistant to any currently prescribed topical antibiotic (e.g., ampicillin, clindamycin). Over-the-counter topical treatments are also used to prevent breakouts (e.g., benzoyl peroxide). Since these agents help

reduce the oil on the surface of the skin and are not antibiotics, drug resistance does not develop in the bacteria. Recently, benzoyl peroxide has been added to clindamycin as a way of combating drug resistance, and the combination is being promoted as resistance-proof. This study examines the development of resistance of *P. acnes* to clindamycin treatment versus clindamycin/benzoyl peroxide treatment using the Kirby-Bauer disk method.

Denny-Brown, Sinan; Christopher Jackson; Lisa Rubinsak; and Daniel Vacendak.. Beta Rho, Wake Forest University. Effect of Foraging Experience on Muscarinic Receptor Signaling in the *Apis Mellifera* Brain.

After the first three weeks of their adult lives, worker honey bees become foragers that collect nectar and pollen. Previous studies have shown that foraging experience in honey bees is related to an increased volume of the mushroom bodies – a region of the insect brain that controls learning and memory. The cholinergic muscarinic system works in conjunction with the mushroom bodies to process sensory information. Through the use of confocal fluorescence microscopic observation of stained young (one-day old) and old (forager) honey bee brain sections, this study tested the hypothesis that foraging experience in old bees greatly stimulates cholinergic muscarinic receptors, whereas the lack of foraging by young bees causes less significant muscarinic signaling. The only result that could be considered conclusive was that the location of muscarinic signaling was determined to be in the calyces of the mushroom bodies and in the optical lobes. The hypothesis was found to be neither supported nor refuted because a defective secondary antibody caused half of the trials to not show significant immunolabeling. The other two trials both exhibited bright immunolabeling, but the presence of multiple variables (foraging experience and primary antibody concentration) prevents conclusions from being drawn on the matter.

Munoz, Angela. Beta Eta, Florida Southern College. A Quantitative Study on the Distribution of the Channeled Apple Snail *Pomacea Canaliculata* in a Central Florida Lake.

The purpose of this study is to simultaneously determine the distribution of *Pomacea canaliculata* in Lake Hollingsworth and the correlation between water temperatures and number of egg casings. *P. canaliculata*, more commonly referred to as the Channeled Apple Snail (CAS), made its way from South America to Florida in 1978. This species is of great concern because of the damaging ecological effects it has on lake habitats. Once this species is introduced by either storm drains, flood waters, or by humans their voracious appetites cause damage everything in the lake. Data was collected consistently from Lake Hollingsworth several times a week for evidence of *P. canaliculata*. This evidence was in the form of egg casings, shells, and the snail it self. Knowledge of this helps to understand how they distribute throughout the lake since the onset of the snail's arrival some time in August 2005. In areas where signs of *P. canaliculata* had already been established, a record of the temperature was kept at all times. This study is aimed at determining how the CAS spreads from one lake to another, how rapidly it invades a lake, and how to prevent the distribution of the CAS into Southern Landing.



Kullman, Lydia N. Mu Gamma, Western Kentucky University. Diet affects immunologically relevant gene expression in brains of *Toxoplasma gondii* infected mice.

The protozoan parasite, *Toxoplasma gondii*, is a serious health concern for pregnant women and HIV/AIDS individuals. Previous studies provided evidence that dietary supplementation with the antioxidants vitamin E and selenium is harmful during infection in mice, however a diet lacking in these antioxidants results in reduced pathology including decreased counts of tissue cysts. In the present study, we used the technique known as microarray, to investigate the response of the immune system to *T. gondii* infection in C57Bl6/J mice maintained on one of these two diets. The microarray (Agilent Oligo Microarray, Whole Mouse Genome) allowed comparisons in levels of immunologically relevant gene transcripts in the brains of both infected and non-infected mice (4 groups; 4 mice per group). In this analysis, we focused specifically on the following genes: IFN- $\gamma$ , various interleukins, TNFs, TGF- $\beta$ , and Nos. Transcripts for the following genes were up-regulated ( $>2$  fold,  $p < 0.05$ ) in antioxidant-supplemented mice as compared to non-infected supplemented mice; TNFsf 10 and 13 $\alpha$ , interleukin 1 $\alpha$ , and IFN- $\gamma$ . The following genes were up-regulated in infected deficient mice: TNFsf 10, IFN- $\gamma$ , and TGF- $\beta$ . Support of the National Institutes of Health and the National Center for Research Resources Grant P20 RR16481 is gratefully acknowledged.

Schnitzlein, Carla W. & Patricia Anderson. Beta Eta, Florida Southern College. An Artificial Wetland as a System for Filtering Fecal Coliform.

Lake Hollingsworth is known for its year-round high coliform counts and for a spike in its *Escherichia coli* population in the winter season. The purpose of this study was two-fold; first, hypothesizes as to why the annual spike occurs were examined using data from the city of Lakeland, other prior studies regarding the high counts in the winter, and the investigators' own research and data. The next, and primary, focus of this paper is to determine the effectiveness of Florida Southern Landing as a storm water treatment wetland. Its effectiveness was established by measuring the amount and rate of coliform deposited into the landing via three storm drains and then also measuring the outflow into Lake Hollingsworth.

Zhou, Yi. Mu Gamma, Western Kentucky University. Analysis of gene expression in mouse brains during *Toxoplasma gondii* infection.

Toxoplasmosis is caused by the protozoan parasite, *Toxoplasma gondii*. Infection poses a critical threat to AIDS patients and to the fetus during pregnancy. Previous studies have shown that supplementation of mice with vitamin E and selenium results in increased cyst number, pathology, and weight loss during infection. The goal of the present study was to evaluate changes in gene expression in the brains of mice following *T. gondii* infection. At 2 weeks post-infection, brains were removed and RNA was isolated using RNeasy Lipid Midi kits (Qiagen). Agilent Oligo Microarrays were utilized to screen mRNA samples. Differentially expressed genes were identified with annotated function,



and molecular pathways were explored using PathwayStudio. Comparison of the transcripts from non-infected and infected mice revealed 1,688 differentially expressed genes ( $p < 0.05$ ). A total of 507 genes were up-regulated and 71 genes were down-regulated (2-fold or greater) in infected mice. Nineteen chemokine related genes, and over 60 cytokine or cytokine-related genes showed increased expression. Greater than 60% of all genes up-regulated in infected mice could be categorized as pro-inflammatory, immune function, or cellular defense genes.

Support of the National Institutes of Health, National Center for Research Resources Grant P20 RR16481 is gratefully acknowledged.

**\* Frank G. Brooks Paper Award winner Southeastern District I & II**

### **Poster Presentations Southeastern District I**

Cirilo, Stephanie R. and Steven M. Hill. Sigma Gamma, Erskine College.  
Limb Bone Strain Rates in Divergent Locomotor Modes: Turtles and Frogs Compared.

Empirical data indicate that bones experiencing higher rates of strain during loading can withstand greater magnitudes of strain before yield failure. Here, we test for potential differences in strain rate that could affect load bearing capacity in two vertebrate lineages with dramatically different locomotor habits: emydid turtles, which typically walk slowly, and ranid frogs, which typically use rapid jumps. Strain rates were collected *in vivo* from strain gages implanted on the femur of multiple individual river cooters (*Pseudemys concinna*) and bullfrogs (*Rana catesbeiana*). Strain recordings were made as the animals walked or jumped on a treadmill while filmed with high speed video. Strain rate was positively correlated with strain magnitude in each species. In addition, the time of foot contact with the ground for jumping frogs was as much as four times shorter than that for walking turtles. This difference likely contributes to the substantially greater peak strain rates found in frogs versus turtles. Thus, differences in rates of limb bone loading rates between turtles and frogs may be related to differences in load bearing capacity of the limb bones between these species.

Gaylord, Matt and Shea Tuberty. Beta Psi, Appalachian State University.  
Detection of vitellogenin induction in male fish exposed to estrogens in wastewater treatment plant effluents.

Municipal wastewater has been widely-documented to contain compounds which are introduced to aquatic systems and can significantly impact biota. Estrogens represent a class of xenobiotic chemicals present in wastewater from their use in birth control and estrogen supplement pharmaceuticals. The estrogenic effect of sewage treatment effluent on male fish from the S. Fork, New River in Boone, NC was investigated to determine population-level effects of these xenobiotics. Male expression of egg yolk precursor protein, vitellogenin (Vtg), in the plasma of

two native sucker species (*Catostomus commersoni*, *Hypentelium nigricans*) was used as a molecular biomarker for endocrine disruption. Vtg presence was determined by SDS-PAGE and Western Immunoblot using a mouse anti-carp Vtg primary antibody. For both taxa, western blotting resulted in a vitellogenin band at 55 kDa. As expected, Western blots of female plasma exhibited Vtg-specific bands while males demonstrated even denser Vtg bands. Molecular analyses of plasma vitellogenin levels indicated estrogen exposure in male specimens of both Catostomid species. Elevated male levels of Vtg when compared to females is explained by the absence of ovaries which serve to sequester Vtg in female fish. Solid-phase extraction and GC-MS analysis of the chemical constituents from effluent samples will be conducted.

Howell, Brandie N. Sigma Gamma, Erskine College. The Effect of Aquaporin 3 and Oral Glycerol Applications on Wound Healing in Mice.

Previous work has shown that the combination of AQP3 (aquaporin 3) and PLD2 (phospholipase D2), in the presence of glycerol, create phosphatidylglycerol, a unique signaling molecule involved in the differentiation and proliferation of epidermal keratinocytes. Thus, an experiment was performed to investigate this signaling module and its interaction with glycerol. The utilization of glycerol to increase differentiation and decrease proliferation in keratinocytes could have positive ramifications in wound healing and in the treatment of skin diseases resulting from abnormally increased proliferation, including psoriasis and non-melanoma skin cancers. An experiment utilizing transgenic mice displaying an overexpression of AQP3 gene (HK1-AQP3 TG mice) was designed to compare wound-healing rates. The effects of oral glycerol applications were also explored. A full thickness wound was administered in the flank of the mouse. Four groups of mice were established: transgenic and non-transgenic mice treated with oral glycerol in the water supply and transgenic and non-transgenic mice receiving no treatment. The rates of wound healing were measured and analyzed. Initial analysis of data indicates oral glycerol accelerates wound healing due to increased glycerol transport and, in turn, increased differentiation and decreased proliferation; however, no differences in wound healing were noted between the transgenic and non-transgenic mice.

Vadlamudi, Charita. Salem College, Beta Alpha. Effect of Mechanical Damage on Apoptosis in Porcine Patellar Cartilage.

Osteoarthritis is characterized by a significant deterioration in articular cartilage covering a synovial joint. It is believed that mechanical damage to cartilage is a key factor in the development of osteoarthritis. This study intends to determine if indeed, mechanical damage induces apoptosis (programmed cell death). We hypothesize that there would be significantly higher numbers of apoptotic cells in impacted patellae and also that there are significantly greater numbers of apoptotic cells tissue that was cultured for 0 days than in tissue cultured for 14 days. Porcine patellae were used in this study for their convenient size and structure. A high impact load of 2000 N was applied to patellae that were then cultured for 0 or 14 days. Controls for this study were un-impacted patellae that were 0 or 14 days in culture. TUNEL staining using Apotag detection kit of tissues from the impacted and non-impacted patellae resulted in staining of



apoptotic cells. The apoptotic cells were counted using Meta Morph and analyzed for significant differences in apoptotic cells between control and impacted tissues. A significant difference was observed in the number of apoptotic cells between tissue that was un-impacted and tissue that was impacted with a high load.

Jordan, Rebekah F. Beta Alpha, Salem College. Do the PI3K/Akt and estrogen receptor pathways "cross-talk" in normal endometrial stromal cells?

The endometrium is the tissue that lines the uterine cavity. Endometrial cancer is the most common cancer of the female reproductive tract. Estrogen is believed to be a major causative factor in the development of endometrial cancer. Normal proliferation of endometrial cells involves a signal transduction pathway of several proteins including PI3K, Akt, and mTOR. A frequent abnormality in endometrial cancer is a loss of regulation of this pathway. There are multiple stimuli that can activate the PI3K/Akt pathway. The hormone insulin can initiate signal transduction by binding to the insulin receptor, ultimately leading to induction of cell proliferation. Another pathway which leads to endometrial cell growth involves signal transduction through the estrogen receptor (ER). This pathway begins with the binding of estrogen to the ER. The ER becomes phosphorylated and the transduction pathway begins. In endometrial cancer cells, it has been demonstrated that activation of the PI3K/Akt pathway by insulin also leads to the phosphorylation of ER, termed "cross talk". The purpose of this project was to determine whether cross talk occurs between the signal transduction pathways of the insulin receptor and ER in normal human endometrial stromal cells. Preliminary data suggest that cross talk may be a normal cellular process occurring in endometrial cells.

Polson, Amanda. Psi, Winthrop University. Classification of Foot and Mouth Disease Virus.

Foot and Mouth Disease Virus (FMDV) is a member of the family Picornaviridae and the genus *Aphthovirus*. Seven distinct serotypes have been identified: A, O, C, SAT1, SAT2, SAT3, and Asia 1. Foot and Mouth Disease is one of the most contagious animal diseases and has the potential to eradicate tremendous numbers of livestock causing great economic losses if not controlled. Complete (118) genome sequences were aligned at the amino acid level and phylogenetic trees have to date been generated by the maximum parsimony (MP), maximum likelihood (ML), minimum evolution (ME), and neighbor-joining (NJ) methods using the uncorrected proportion of amino acid differences (*p*). Our results support the proposed classification scheme with two major lineages of serotype O (bs=100%) most closely related to Asia 1. Within the A serotype, we found evidence of transmission via international trade from Europe to Central America. In addition, there was significant support for placement of two unclassified Taiwanese sequences within the serotype O clade (b2=92%). Estimation of synonymous and nonsynonymous substitution rates suggest conserved evolution of antigenic sites with one exception where there was significantly greater nonsynonymous change in the epitope compared to the remainder of the VP3 capsid protein.



Hathaway, Jonathan. Psi, Winthrop University. The Role of Thrombomodulin in Prostate Cancer Progression.

This research focuses on the role of the anti-coagulant protein, thrombomodulin (TM), and its ligands in prostate cancer. TM on endothelial cells binds to the serine protease, thrombin (IIa), and the TM-IIa complex activates the serine protease, protein C (pC), into the anticoagulant serine protease, activated Protein C (APC). Men with prostate cancer have elevated levels of TM receptors on their prostate cancer cells (CaP) and in serum compared to men without prostate cancer. In addition to its role in coagulation, TM regulates the proliferation of CaP cells in vitro. Since TM is elevated in patients with CaP, regulates CaP cell proliferation, and is involved with pC, APC, and IIa in coagulation, we chose to study what effect these TM associated serine proteases have on the proliferation of PC-3, LNCaP and DU-145 CaP cell lines. We determined that as IIa concentrations increased (0-400 nm), the rate of proliferation of DU-145 and PC-3 cells first increased then showed a decreasing trend at high IIa concentrations. IIa decreased LNCaP proliferation. As both pC and APC concentrations increased, the proliferation each cell line increased slightly. We concluded that the TM-IIa-pC-APC, system regulates proliferation of PC3, DU-145, and LNCaP CaP cell lines.

Robinson, Chad. Psi, Winthrop University. Phylogenic Analysis of Caprine Arthritis Encephalitis Virus.

Caprine arthritis encephalitis virus (CAEV) is a member of a group of small ruminant lentiviruses. The genome is approximately 9.2 kb and codes for 4 main proteins (gag, pro, pol, and env), including reverse transcriptase. CAEV are economically important pathogens infecting goat primarily via horizontal transfer through virus-ingested milk in the first days of life. We conducted a phylogenetic analysis using SRLV *gag* and *polymerase* sequences to examine evolutionary relationships among two of the four proposed serotypes (B1 and A3). Our data set included 4 sequences that have been to date unclassified. In addition the phylogeny will be used to identify independent pairs and test the hypothesis that overlapping reading frames within the *gag-polymerase* sequence complex impose constraints on possible nucleotide substitutions in the different genomic regions. Sequences were aligned at the amino acid level and phylogenetic trees have to date been generated by the maximum parsimony (MP), maximum likelihood (ML), minimum evolution (ME), and neighbor-joining (NJ) methods using the uncorrected proportion of amino acid differences (*p*). Preliminary results suggest that contrary to previous results, there is no support for separation of A3 and B1 serotypes. In addition, the four unclassified sequences were significantly related to other B1 sequences.

Wiley, Rachel. Psi, Winthrop University. The Role of Thrombomodulin, Thrombin, Protein C and Activated Protein C in Prostate Tumor Cell Motility.

Prostate cancer (CaP) is the second leading cause of cancer deaths in men. Patients with CaP are at a high risk of developing thrombosis. Thrombosis

develops when excess thrombin (IIa), a serine protease which causes a fibrin clots, is generated. Thrombomodulin (TM) is an endothelial cell receptor for thrombin that normally decreases thrombin activity by activating protein C into activated protein C (APC). APC inactivates coagulation by inhibiting thrombin generation. Interestingly, TM has been found in elevated levels in the tissue and serum of CaP patients (Glasscock 2005). Thrombin and APC have been shown to be pro-metastatic in other types of cancer (Lindahl et al 1993). We studied how the TM-IIa-APC system regulates the ability of the CaP cell line PC-3 to metastasize. Scratch Migration assays were done in the presence and absence of TM, thrombin, protein C, and APC. Blocking TM expression with anti-TM MAb decreased migration of PC-3 cell lines by 54%. In contrast, thrombin, protein C, and APC did not change the ability of PC-3 cell lines to move. Therefore, although TM regulates PC-3 CaP cell line motility, it does so via a mechanism other than the thrombin-protein C-APC system.

Burton, Julie. Psi, Winthrop University. Characterization of the oncogenic properties of deletion mutants of high mobility group A1a.

The high mobility group A (HMGA) proteins are a family of proteins involved in transcriptional regulation, retroviral integration, and cancer initiation. The family members, HMGA1a, HMGA1b, and HMGA2, are all aberrantly expressed in cancers and have well established oncogenic properties. However, the precise mechanisms involved in HMGA-mediated transformation are unclear. HMGA proteins possess three characteristic AT hook motifs and an acidic carboxy-terminal tail. Previous studies on the role of these motifs in transcription show that the AT hook motifs act cooperatively to facilitate binding of HMGA proteins to their DNA targets while the acidic C-terminal tail portends binding specificity. To understand how specific regions of HMGA contribute to transformation, we will delete the characteristic regions of the protein. Mutants will be transfected into fibroblast cells and transformation assays will be conducted. These studies will contribute to our current understanding of the role of these proteins in cancer.

Kahdy, Kristin. Tau Xi, Meredith College. Effects of the herbal drug BM7 on CD4 cell counts in mice.

The physiological effects have not been determined for an herbal drug (code BM7) that is used to treat AIDS patients in Kenya, East Africa. In order to determine the effects of BM7 on CD4 cell counts, which are diminished in AIDS patients, CD4 cells, differentials, and hematocrits were counted in six BALB/C control female mice, three BALB/C female mice that receive one injection of BM7, and three BALB/C female mice that received a series of two injections. Dynabeads (Dynal Biotech) that specifically target mouse CD4 cells were used to quantify the CD4 cells. BM7 was supplied by the Center for Contemporary Medicine, Kenyatta University, Nairobi. CD4 cells and WBC's decreased as a result of treatment with BM7; PCV did not change. The percent of lymphocytes increased which could be due to an overall decrease in neutrophils and monocytes. Further research is required to determine the long-term effects of BM7 and/or if cytokine interference is altering WBC counts.



Quintero-Varca, Tatiana. Tau Xi, Meredith College. Masculinization of Genetic Female *Betta splendens* Fish by immersion in 17- $\alpha$ -Methyldihydrotestosterone and Androstenediol Hormones.

Siamese fighting fish, *Betta splendens*, is a native of Thailand, Malaysia and South Asia. The fighting fish are of great aquaculture and commercial importance as ornamental fish. Male Betta fish is more colorful and with larger fins than female and thus has a higher commercial value. Sex reversal in fish has been achieved by different hormonal treatments in previous researches. Hormonal induction of sex reversal in fish is possible in 47 species of gonochores and hermaphrodites using one of the 31 steroids. Hormonally sex reversed fish may suffer from poor reproductive performance. The sex reversal treatment of fish by immersion in hormones involves periodic or continuous exposure of embryonic stages in water containing steroids. Masculinization is the transformation of a genetic female into a male. Masculinization of genetic female Betta was attempted by immersion in different alcohol/hormone concentrations (2.0, 1.5, 1.0, 0.5, 0.0 % Alcohol) for a 24 hour period at room temperature. The hormones used were 17- $\alpha$ -Methyldihydrotestosterone (20mg/L) and Androstenediol (100 mg/L), both of which are male hormones.

Tibbetts, Jessica A. & Rebecca K. Hunter. Psi Chi, Virginia Wesleyan College. Examination of erythraeid mites infecting tropical species of harvestmen (Arachnida, Opiliones) from Trinidad, W. I.

Erythraeid mites are generalist ectoparasites of arthropods. In temperate areas, the biology of these mites and their interactions with hosts have been studied. However, relatively little is known about the biology of these mites or the interactions with harvestmen in the Caribbean. In July 2005, we undertook a field study of harvestmen in the Northern Range of Trinidad, W. I. We collected a total of 458 harvestmen representing xx species and found an overall infestation rate of 9.4%. The intensity of infection ranged from 1-17. In the Fall, we prepared leg samples from harvestmen infected with mites for examination by scanning electron microscopy. Our investigation of the microanatomy of these mites indicates that they differ from other published species accounts for erythraeid mites and thus may represent a new species. Recognition of erythraeid mites species however is difficult, because the adults are not parasitic and we did not collect any during our field study.

\* Rumbough, Damian. Beta Eta, Florida Southern College. The positive effect of a recently created wetlands on species diversity.

Prior to creating an artificial wetland adjacent to a central Florida lake, a biotic survey was conducted on the site. The survey has been repeated post-construction to determine the effects on the biota created through a multitude of new habitats. The wetlands main function is to serve as a storm water treatment area but due to the diversity of its vegetation zones the wetland's area has attracted many different species of vertebrates. The overall goal of this project was to show the positive effects of the creation of a man made wetlands on the reptile amphibians and avian species. A primary goal was to develop habitat



matrices for each of the avian species inhabiting the wetlands. Another goal was to document the different kinds of vertebrate species that occur in the wetlands. A comparison of species diversity of the wetlands to the adjacent lake demonstrated increased vertebrate diversity with increased habitat diversity. For a representative avian species habitat utilization matrices were developed to show how each of the eight vegetation zones within the wetlands were used.

Evans, Jennifer D. & Melanie J. Lee-Brown. Sigma Phi. Guilford College.  
Phylogenetic analysis of *Azomonas insignis*.

The azotobacteria are free-living nitrogen fixers specifically related to the fluorescent pseudomonads. A preliminary analysis of the little-characterized specie *Azomonas insignis* suggested that this organism was not a member of this phylogenetic group. We report here the phylogenetic analysis of *A. insignis*, using both small subunit (16S) ribosomal RNA and ribonuclease P RNA sequences. These independent markers both show that this organism is actually a member of the genus *Acinetobacter*, a member of the Moraxella group, and only distantly related to the fluorescent pseudomonads and azotobacteria. Characterized species of *Acinetobacter* (*Acinetobacter baumannii* is an emerging opportunistic pathogen) are not known to be able to fix nitrogen, but "*Azomonas insignis*" was confirmed to be able to grow with dinitrogen as the sole nitrogen source.

Geller, Amy & Charles Allen. Sigma Psi, Florida Institute of Technology.  
Catecholamine-Induced Changes in Vascular A7r5 Cell Gap Junctions Following Exposure to Adrenalin Metabolites.

Pathology resulting from increased levels of catecholamines *in vivo* has led us to investigate the effect of adrenalin on the gap junction proteins and the possible relationship to vascular toxicity. Gap junction channels are specialized ion channels important to cardiovascular function. Adrenalin and its metabolites, adrenochrome and adrenolutin were used in this study. Utilizing A7r5 cells we evaluated the effects of catecholamines on connexins. Using immunoblotting and immunohistochemistry, we demonstrated that the catecholamines differentially affect connexin expression in that Cx40 protein was reduced and Cx43 increased. Cell-cell communication was increased 3 fold. Cells were treated with the adrenergic  $\beta$  blocker Propanolol to see if the effect of the catecholamine could be reduced. Propanolol did not reduce the effect of adrenolutin. Given that a reduction in expression of functional Cx40 channels has been reported with hypertension, associated with irregular vasomotor activity and conduction abnormalities in the heart, the effect of these agents on the cardiovascular gap junction proteins has implications for providing a mechanism for some of the deleterious effects noted to occur with elevated catecholamine exposure.

Anderson, Patricia and Ashley Bowman. Beta Eta, Florida Southern College.  
Avian diversity in an artificial wetland in comparison to adjacent lake shore habitat.

Over a five week period, the avian and vegetative density was taken from ten designated areas around Lake Hollingsworth and compared to the avian and vegetative diversity of the artificial wetland, Southern Landing. All diversities were

computed based on the Shannon-Weiner model of diversity. Over the course of the study, certain species were found to be more prevalent at certain wetland areas. It was found that the diversity of the avian species present was directly dependent on the habitat species diversity. Extremes of the habitat densities were held accountable for absence of diversity. The avian diversity found on Lake Hollingsworth showed to be more diverse than that of Southern Landing. The conclusion was supported by correlation of vegetative diversity and habitat area.

Amis, Jackie. Sigma Phi, Guilford College. The state and contraction of wildlife corridors in Kimana Group Ranch near Amboseli Kenya: Analysis of human impacts.

The purpose of this study was to assess the amount of land available for a wildlife corridor in the Kimana Group Ranch (KGR). The main techniques used were questionnaires, GPS surveys and spatial analysis. This study found that the structures that displace wildlife were *bomas*, or Maasai homesteads ( $0.23 \pm 0.04$  km), roads ( $0.18 \pm 0.02$  km), electric fences ( $.07 \pm 0.04$  km) and institutions ( $0.18 \pm 0.06$  km). Livestock displaced wildlife  $0.21 \pm 0.02$  km. The largest area displacements were caused by *bomas* ( $28.11 \text{ km}^2$  or 11.19% of KGR) and the electric fence ( $69.29 \text{ km}^2$  or 27.58% of KGR). All human activities displaced wildlife from  $140.01 \text{ km}^2$  (55.74% of KGR). In addition, a cluster of *bomas* was blocking off the 5 km corridor between the Namelok and Kimana fences that leads to Kimana Wildlife Sanctuary leaving 1.82 km between the Namelok fence and the *bomas* and 0.112 km between the Kimana Fence and the *bomas*. If the corridor was closed then the wildlife would avoid Kimana Wildlife Sanctuary, and local opinion, which was dependant on benefits received from the sanctuary, on conservation would decline. These findings show that KGR status as a corridor and dispersal area for wildlife is severely threatened.

Thomas, Emily O. Beta Eta, Florida Southern College. A Survey to Evaluate the Scientific and Educational Values of, and Ancillary Activities on, an Urban Lake and Adjacent Wetland.

In 2004, a multipurpose artificial wetland was constructed adjacent to Lake Hollingsworth in Lakeland, Florida. The primary function of this wetland is to provide a natural filtration system to intercept stormwater runoff prior to it entering the lake. Secondary purposes include 1) facilitating public recreation, 2) providing a site for student research, and 3) aiding in the education of the general public about lake pollution and preventative measures that can be taken to ensure the continued quality of the lake ecosystem. This study was conducted to evaluate the effectiveness of the fulfillment of these requirements. Recreational usage was assessed at Lake Hollingsworth and the artificial wetland. Data were collected to determine usage overall, and by activity, beginning January 17, 2006 and ending February 20, 2006. Preliminary surveys of the area around the wetland identified litter as a major problem. Alternatively, analysis of questionnaires answered by lake users revealed that poor vegetation diversity and lack of bathrooms were more common deterrents to recreational usage. Participation in activities was compared to data collected in 1991, confirming that walking remains the most popular form of recreation around the lake. Age,



gender, and point of origin were also collected, and peak usage times were reevaluated.

Clarke, Andrea N. Sigma Gamma, Erskine College. Renal Microvascular Response to P2 Receptor Stimulation in Angiotensin II Hypertension with 8% Salt.

Previous studies suggest locally released ATP is a chemical mediator of vasoconstriction which occurs through activation of P2 receptor proteins in preglomerular renal microvascular smooth muscle cells. Previous studies with Angiotensin II hypertensive animals resulted in blunted vasoconstriction to P2X<sub>1</sub> receptor stimulation. Rats were made AngII hypertensive and fed an 8% salt diet with the hypothesis that compromised autoregulatory responses of these rats could be attributed to impaired P2 receptor expression or P2 receptor signaling. Blood pressure and body weight of experimental and normotensive control rats were monitored for two weeks. Preglomerular microvascular smooth muscle cells were isolated from both experimental and normotensive control rats, loaded with Fura-2 dye, challenged with 10μM ATP or 10μM β,γ-methylene ATP, and observed for intracellular Ca<sup>2+</sup> concentration changes. Previous western analyses and immunohistochemical stainings of normotensive rats and AngII hypertensive rats revealed that P2X<sub>1</sub> receptor protein expression is unique to the preglomerular renal microvessels. Western analysis done to see if P2X<sub>1</sub> expression is changed in AngII hypertensive rats fed an 8% salt diet revealed unchanged P2X<sub>1</sub> receptor expression. Renal microvascular smooth muscle cells exhibited a markedly attenuated response to P2 receptor stimulation (ATP) and to P2X<sub>1</sub> receptor stimulation (β,γ-methylene ATP).

Ali, Marium A. Tau Xi, Meredith College. Role of the Sox Gene SoxN and Homeotic Genes Scr and Tsh on CNS Midline of Drosophila.

How are the fates of cells of the central nervous system (CNS) determined in various regions of the body during development? Homeotic genes are responsible for specifying the anteroposterior axis of the body by forming the identities of the different segments. These experiments are designed to examine the role of homeotic genes on a specific CNS cell type, midline cells. Midline cells lie in the center of the CNS and are responsible for guiding the development of axon pathways by sending out 'signals' to axons. Sox genes are diverse transcriptional regulators that play an important role in early neural development of midline cells. In the fruit fly, the SoxN (*SoxNeuro*) gene is necessary for the normal development of midline glia, particularly in the mid section of the embryo. Mutant SoxN flies lack midline glia in the central region of the embryo. The focus of this study is to determine if SoxN has any effect on the expression of the homeotic gene Scr (*Sex combs reduced*), which determines the identity of the thoracic region. Specifically we wish to determine if Scr works in conjunction with SoxN in the development of the mid section of the midline. In addition, Tsh (teashirt), another homeotic gene expressed in the thorax, abdomen and ventral nerve chord is examined. The role of Tsh on the CNS midline is studied, by examining the effect of Tsh mutants on *wrapper*, a gene that is expressed in midline glia. The results indicate how SoxN, Scr and Tsh work with other genes to form cell identities within the CNS of the Drosophila embryo.



Markijohn, Catherine M. Tau Xi, Meredith College. Regional heterothermy in Felidae during pulsed vocalizations.

Of all the mammals in the world, only those in the families Felidae and Viverridae have the ability to create regular, continuous, pulsed vocalizations, commonly known as purring. The mechanics of purring have been documented (Remmers and Gautier, 1972); however, the physiological consequences are not fully understood. One explanation for the potential physiological advantage for cat purring has to do with their hunting strategy. After sudden bursts of activity, purring may be a way to regain physiological equilibrium by down-regulating sympathetic control. Decreased sympathetic tone should result in increased peripheral blood flow. To research this effect, thermographic IR images and audio recordings will be made of several wild and domestic cat species prior to, during, and after pulsed vocalizations. Though seemingly trivial, the effects of purring could actually aid humans and felines. Cats suffer from significantly fewer orthopedic disorders, possibly because purring occurs at a physiologically beneficial frequency. Cats also maintain muscle condition during long periods of inactivity, possibly also due in part to purring; this could have applications to humans whose muscles are not exercised for extended periods.

\* **John C. Johnson Poster Award winner Southeastern District I**

### **Poster Presentations Southeastern District II**

Rushing, Brett, Kevin Jenne, Taylor Robertson, and Robert Carter. Mu Phi, Jacksonville State University. Spatial and Age Structure of Old-growth Mountain Longleaf Pine, *Pinus palustris*, Stands in the Talladega National Forest of Northeastern Alabama.

The spatial and age structure of four old-growth mountain longleaf pine stands was examined to determine recruitment patterns. To determine tree age, standard coring techniques were performed that consisted of strategic coring, drying, mounting and sanding of each core. The distance and angle between each tree was also measured. Spatial analysis revealed clumping of individuals relate to tree age. The clumpings can be related to past anthropogenic changes such as the Trail of Tears and land acquisitions by government agencies.

Anderson, Melanie. Mu Chi, Midway College. *Cryptosporidium species* in the domestic cat population of central Kentucky.

This study determined the prevalence rate of *Cryptosporidium species* (spp.) in the domestic cat population of central Kentucky. *Cryptosporidium spp.* are parasites that invade the epithelial cells of the gastrointestinal and/or respiratory tract. In companion animals, these parasites are of great importance because they can be a direct or indirect source of human cryptosporidiosis. Fecal specimens were collected from 25 domestic, healthy or diseased kitten and adult cats in central Kentucky during September and October of 2005. The specimens

were preserved in 10% formalin, concentrated by the formalin ethyl-acetate procedure, and stained according to the MeriFluor® *Cryptosporidium/Giardia* Direct Immunofluorescent Detection Procedure. *Cryptosporidium* spp. oocysts were present in four of the 25 fecal specimens collected. This accounts for 16% of the population tested. Two of the four cats positive for oocysts were asymptomatic, which could leave owners unaware that their cat is infected.

\* Cho, In Ki. Mu Epsilon, Troy University. Lead acetate exposed *Saccharomyces cerevisiae*—gene expression and growth of deletion strains.

Microarray analysis of wild type *Saccharomyces cerevisiae* identified genes with altered gene expression in response to lead acetate exposure. Microarray analysis was used to investigate yeast that were exposed to varying concentrations of lead acetate. The gene expression patterns indicate a large number of genes are both induced and repressed in response to lead acetate. Additionally, yeast strains harboring deletions of the lead acetate responsive genes were exposed to lead acetate (YPD/PbAc) and calcium acetate (YPD/CaAc) containing rich media. The resulting growth patterns were assessed. Strains with altered growth in both YPD/PbAc and YPD/CaAc are likely responsive to acetate or divalent cations and are not specifically lead responsive; however, no strains were calcium acetate sensitive. These lead acetate responsive strains will be utilized in future studies of lead acetate sensitivity in yeast.

Osaya, Emeinoh A. Eta Mu, Southern University, Baton Rouge. Characterization of phosphatidylinositol phosphate synthase in *Chlamydomonas reinhardtii*.

*Chlamydomonas reinhardtii* is a model and widely studied organism that can be either heterotrophic or photosynthetic and continues to provide endless possibilities for scientific studies. *Chlamydomonas reinhardtii* utilizes specific metabolites that regulate a variety of signal transduction processes. Phosphatidylinositol, a major phospholipid in eukaryotic cells of plant and animal cells. This phospholipid may be considered a secondary messenger because of its interactions with specific proteins in order to regulate specific cellular responses. This study provides a brief characterization of the phosphatidylinositol phosphate synthase gene (PIS), which synthesizes phosphatidylinositol from the substrate glucose-6 phosphate(6). Data from the Northern blot shows the PIS gene may be active during the cell cycle because hybridization of purified RNA from synchronized cells to the DNA probe specific for the second exon of the PIS gene occurs. Results show hybridization clearly indicates that mRNA homologous for the PIS gene was present in total RNA isolated from *Chlamydomonas reinhardtii* cc406 cw15 mt- cells.

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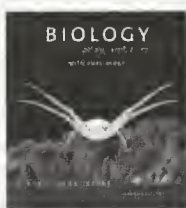


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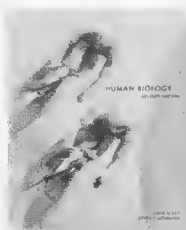
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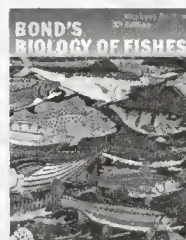


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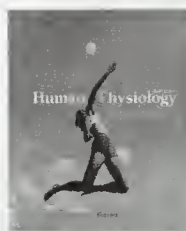
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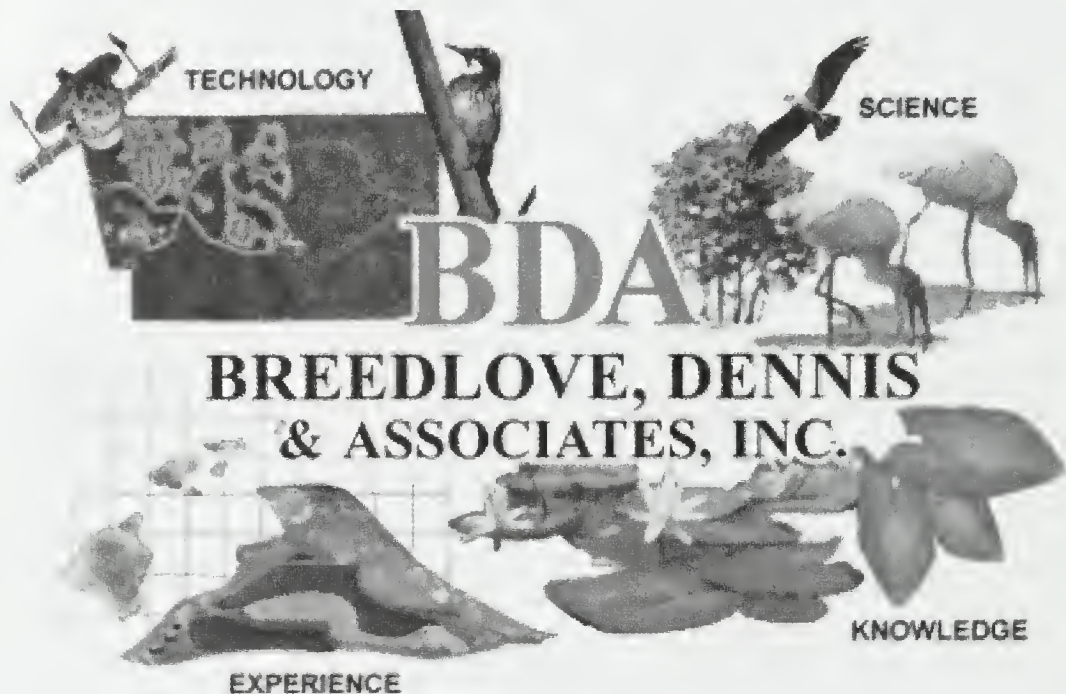
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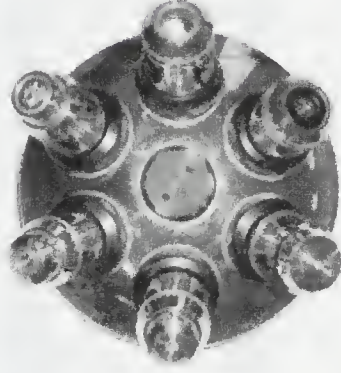
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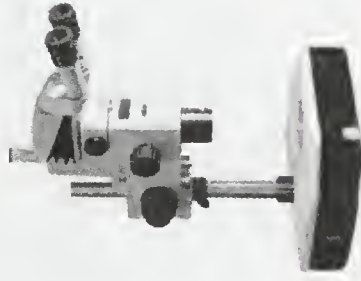


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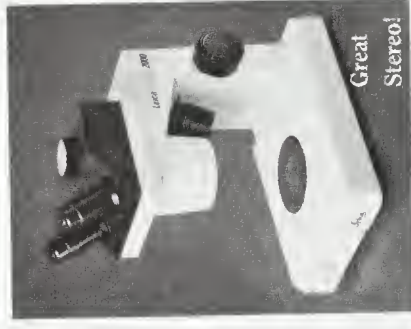
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